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Changes In Wilderness Visits, Visitors, Problems, And Preferences At Shining Rock Wilderness: 1978 and 1990

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CHANGES IN WILDERNESS VISITS, VISITORS, PROBLEMS, AND PREFERENCES AT SHINING ROCK WILDERNESS: 1978 and 1990

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Introduction

The Wilderness Act of 1964 (P.L. 88-577) established a National Wilderness Preservation System to preserve certain lands in their natural condition in order "to secure for the American people of present and future generations the benefits of an enduring wilderness" and to provide "outstanding opportunities for solitude or a primitive and unconfined type of recreation". The Eastern Wilderness Act (P.L. 93-622), passed in 1975, gave legal protection to certain threatened areas in the populous East in order to "preserve such areas as an enduring resource of wilderness which will be managed to promote and perpetuate the wilderness character of the land and its specific values of solitude, physical and mental challenge, scientific study, inspiration, and primitive recreation for the benefit of all the American people of present and future generations". Since 1964, the Congress has passed more than 100 additional wilderness laws (Browning, Hendee, and Roggenbuck, 1988), and the National Wilderness Preservation System has grown from 9.1 million acres to over 91 million acres. The system now includes almost 500 separate wilderness areas managed by the USDA Forest Service, the National Park Service, the Fish and Wildlife Service, and the Bureau of Land Management. The legal mandates of each area reflect those of the 1964 Wilderness Act. Thus, managing agencies are faced with the dilemma of maintaining the natural processes of wilderness while at the same time providing high quality opportunities for certain forms of recreational use.

The federal agencies with wilderness jurisdiction now have almost three decades of experience protecting wilderness and providing appropriate recreational use. This accumulated experience has suggested basic tenets of management. Included among these is the need first of all to manage. Most areas receive considerable use, and designation of the area as wilderness does not assure its protection. Congressman Bruce Vento (1990), Chairman of the Subcommittee on National Parks and Public Lands, recently noted successes and failures of wilderness management, and called upon the four agencies to give even greater emphasis to management. Secondly, wilderness management is primarily use and user management (Hendee, Stankey, and Lucas, 1990). Most site management strategies, like hardening the site, introduction of exotic vegetation, or thinning of the vegetation overstory at campsites, appear either illegal or inappropriate. Finally, among use and user intervention strategies, those which are most lighthanded (i.e., those which as much as possible retain visitor freedom of choice) are the preferred methods (Roggenbuck and Watson, 1986). However, if these procedures are to be implemented successfully, managers need considerable knowledge about their visitors (Lucas, 1982). Informational needs include data on amount of use, how use is changing, when and why people visit wilderness, demographic characteristics of users, kinds of user groups, what people do in wilderness and how long they do it, their perceptions of problems in wilderness, and their preferences for management.

Use of backcountry areas grew at an annual rate of about 11.5% from the end of World War II to the early 1960s (Lucas and Stankey, 1989). This explosive rate caused use to increase seven times, and was a contributing factor to the passage of the Wilderness Act of 1964. Through the 1960s and 1970s use continued to climb, although its rate was lower at about 4.4% per year. Still this led to a 2 1/2 fold increase in overall wilderness use, and prompted concern among managers and visitors alike about crowding, resource impacts, the need for use and user regulations, and the need for more wilderness. By the late 1970s, increases in wilderness use had slowed, and many areas received their year of peak use. During the 1980s use levels have remained about the same, with year-to-year changes being more often negative than positive (Lucas and Stankey, 1989).

Two recent reviews of wilderness research document considerable knowledge of the wilderness visitor. Roggenbuck and Lucas (1987) have summarized findings regarding use patterns and user characteristics for more than thirty wilderness areas. There is a tendency for wilderness users to be male, urban, highly educated, professionally employed with somewhat above average incomes, and to reside in the state of the wilderness they visit. There is a moderate overrepresentation of young adults. Most visitors have considerable past experience in wilderness, and most visit in family groups or in groups composed of family members and friends. Few visit wilderness alone. Distribution of wilderness use is very uneven across time of the week and the

year, across areas, and within areas. Party size is small, and length of stay is short. Hiking is the primary method of travel, with water use on a few areas like the Boundary Waters Canoe Area Wilderness and a relatively small amount of horse use. Finally, most wilderness users engage in multiple activities in wilderness, with hiking, fishing, and photography being the most common.

Stankey and Schreyer (1987) have reported aspects of the wilderness setting that contribute to user satisfaction, and described visitor attitudes and preferences about specific management practices. The two most commonly cited sources of dissatisfaction are presence of others and litter. Visitor response to litter is consistently strong and negative, while there is great variation in the intensity of negative feelings about encounters with others of various types and at various places within wilderness. Most visitors, however, prefer daily contact levels on trails not to exceed two or three parties. Also, almost everyone prefers to camp out of sight and sound of other user groups.

Attitudes of wilderness users have gradually moved from high support for total fire suppression toward one of allowing certain natural fires to burn and even for some scheduled prescribed fires. Wilderness visitors support a diversity of trails to permit different styles of travel, often support the construction of bridges across streams, and express greatest concern about trail maintenance. Basic directional signs are also considered appropriate within wilderness. Users generally oppose the expansion of the number of campsites within wilderness, and do not favor the construction of toilets and permanent fireplaces. Temporary

rock firerings, however, are generally considered acceptable. Attitudes about the appropriateness of rustic, three-sided shelters in wilderness are mixed, with support usually exceeding opposition in wildernesses where the shelters currently exist.

Wilderness visitors generally accept use controls if the area is being used at or beyond capacity, but there is much diversity of opinion about specific management practices. The use of information and education as a management tool is supported almost everywhere. Wilderness users seek out and use information when making decisions about wilderness recreation participation, and generally prefer that an optimal amount of information be provided outside the wilderness boundaries (Brown, McCool, and Manfredo, 1987). Many wilderness visitors do, however, support wilderness ranger contacts in the backcountry. Party size limits are well accepted by visitors. Opinions on how use should be limited (e.g., reservation system, first come-first served, lottery, pricing) vary a great deal by area and by user group. Each user group tends to favor the rationing technique which gives itself the best chance of obtaining entrance to the wilderness. For example, people living close to the wilderness favor the "first come-first served up to the area limit", while those living farthest from the wilderness support the reservation system. Finally, wilderness visitors tend to oppose assignment of departure points and campsites as techniques to distribute use and reduce impacts. Exceptions to this are whitewater rafters on some wild rivers, where campsite assignment is often favored.

This brief summary of wilderness use patterns and wilderness user characteristics, perceptions of problems, and preferences for facilities and management illustrate that we have considerable information on which to make management decisions. But there is a lack of information about how use patterns, visitor characteristics, and resource and social impacts are changing across time. We know, for example, that overall use has stabilized or even declined in many wilderness areas. But does that mean that resource impacts and perceptions of crowding have also declined? Lucas and Stankey (1989) and Roggenbuck and Watson (1989) have suggested that with reduced visitation, managers can now focus on providing high quality wilderness environments and experiences, rather than simply trying to maintain current conditions under the onslaught of heavy use. But the recent study by the United States General Accounting Office (1989) of Forest Service wilderness management found widespread problems, including severe impacts to trails and at popular camping areas. For example, while estimated use of Shining Rock Wilderness in North Carolina dropped from an estimated 308,000 visitor days in 1978 to 68,300 in 1986, the GAO reported serious problems of firerings, soil impaction, litter, and loss of vegetation at popular Shining Rock campsites in 1989.

There have been almost no longitudinal studies of wilderness use and user characteristics within individual wildernesses. Lucas (1985) completed comprehensive visitor surveys in the Bob Marshall Wilderness Complex (i.e., the Bob Marshall, Great Bear, and Scapegoat Wildernesses) in 1970 and 1982.

Changes across the two study periods included a shift toward a greater proportion of hiking use over horse use, smaller parties, shorter stays, a smaller proportion of visits with outfitters, more summer and less fall use, less weekend peaking of use, some shift in activities from more consumptive to more contemplative, and less dependence on wood fires (Roggenbuck and Lucas, 1987). Most visitor characteristics remained about the same across time, including urban/rural residence, age distribution, club membership, type of user group, and high level of overall wilderness experience. The same study found more women, somewhat more visitors from out of state, higher education levels, more visitors in professional and technical occupations, and less previous experience in the Bob Marshall Wilderness Complex.

These findings led Roggenbuck and Lucas (1987) to suggest a trend toward fewer wilderness impacts per party. Roggenbuck and Watson (1989) have stated that this along with overall reductions in wilderness use might make the task of wilderness management easier, and permit managers to focus on meeting the needs of individuals for specific wilderness-dependent experiences. But the changes in the Bob Marshall Wilderness Complex might be unique to that area. Many of the changes there might be attributed to the shift away from horse use and toward backpacking use. In areas where that shift hasn't occurred, use patterns may have remained the same, and impacts may have stayed the same or gotten worse. Indeed, in the only other longitudinal study found, Burde and Curren (1986) reported changes in Great Smoky Mountains National Park

backcountry from 1973 to 1983 toward visitors who were older, more likely to be women, more experienced, more often to be with friends than family groups, and to be in smaller groups. Average length of stay was about the same for the two time periods.

What is needed are more longitudinal studies of changes in wilderness use patterns and user characteristics. Such research would permit managers to better understand trends in wilderness use and values, respond to evolving use and user trends, project kind and amount of wilderness impacts, and anticipate demand for wilderness lands. The study reported here of changes in Shining Rock Wilderness visits, visitors, and preferences represents one such needed measure of trends. Shining Rock Wilderness in North Carolina was chosen because it was one of the few areas in the East designated wilderness by the 1964 Wilderness Act, its use was very high in the late 1970s but has dropped dramatically, its management was reviewed by the General Accounting Office in 1989, and a baseline study of the area's use and user characteristics, perceptions of problems, and management preferences was done in 1978 (Roggenbuck, Timm, and Watson, 1979).

Research Objectives

The overall goal of the study is to provide managerially relevant information on changes in use and user characteristics in Shining Rock Wilderness between 1978 and 1990. More specific objectives are as follows:

1. Determine characteristics of wilderness visits in 1990, including activities, methods of travel within the wilderness, season of use, length of stay, distance traveled, camping practices and conditions encountered;
2. Determine characteristics of visitors in 1990, including types of groups, previous experience, place of residence and socio-demographic descriptions;
3. Determine visitor preferences in 1990, including perceptions of crowding, satisfaction with resource and social conditions encountered, desirability of current and potential policies and management actions, and sources of social conflict; and
4. Compare the use patterns, visitor characteristics, perceptions of problems, and management preferences of 1978 and 1990 Shining Rock Wilderness users.

Methodology

Study Area

Shining Rock Wilderness is a 18,500 acre wilderness area of the Pisgah National Forest of western North Carolina. It was initially established as a 13,600 acre wilderness by the 1964 Wilderness Act, one of only four areas in the East to be included in the original Act. As such, the area is well known regionally for its primitive character, and the 1984 North Carolina Wilderness Act increased its size

to its present acreage. As part of the Southern Appalachian highlands, the area is characterized by rugged mountain ridges and deep valleys. Elevations range from 3,200 feet to five peaks over 6,000 feet. One of these, Shining Rock Mountain, has a spectacular snow-white quartz outcropping that gives the area its name. Streams flow from these mountains to form roaring rivers, including the Pigeon River which is a major tributary of the Tennessee River.

Like most areas in the East, much of Shining Rock Wilderness was farmed and logged in the 1800s and early 1900s. Red spruce and Frazer fir, northern species which once covered the ridge tops, now are found in small, isolated stands. But other forest species, including oaks, hickory, and hemlock, have returned to give the area its wilderness character. A variety of shrubs and flowering plants also make the area special, including several species of rhododendron, mountain laurel, mountain ash, witch hazel, serviceberry, and orchids. Finally, on mountain ridges and saddles, grassy balds still remain. These grassy areas with their views have become focal points for wilderness hikers and campers.

Shining Rock offers a 35-mile system of nine easy to moderately difficult trails. Most visitors enter at two locations, Ivestor Gap and at the Pigeon River exit point on Highway 276 (See Figure 1). The 1978 wilderness user survey (Roggenbuck, Timm, and Watson, 1979) indicated that half of all users entered at Ivestor Gap; another 23 percent entered at the Big East Fork parking lot on the

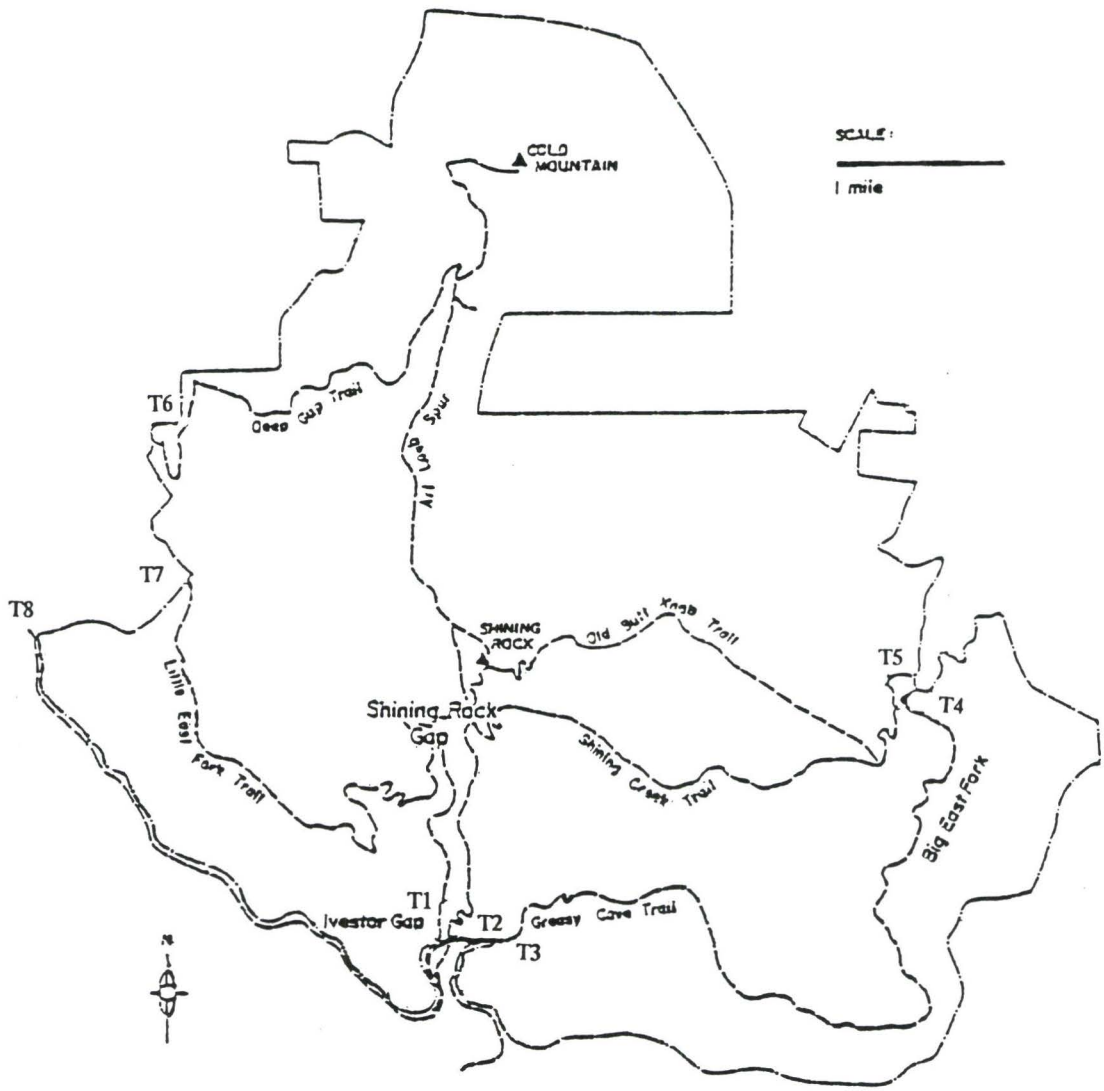

Figure 1. Shining Rock Wilderness with Trailheads

Trailheads

T1 Ivestor Gap
T2 Art Loeb
T3 Graveyard Ridge
T4 Big East Fork
T5 Shining Creek
T6 Daniel Boone Camp
T7 Little East Fork
T8 Fork Mountain

Pigeon River. Trails from these and other access points converge at Shining RockGap, a small bald just below Shining Rock Mountain. The trail system thus contributes to the popularity of Shining Rock Gap as a camping area.

Use of Shining Rock Wilderness is heavy. It increased steadily from 1964 to the mid-seventies, reaching 29,400 visitor days or 2.19 visitor days/acre in 1975. Then in the late 1970s, Forest Service estimates suggest an explosion in use to over 300,000 visitor days per year and 22.6 visitor days/acre. This dramatic increase is difficult to believe, but we do know that use was very high in the late 1970s, and probably reached its peak. In 1990, use was at 55,072 visitor days, or 3.0 visitor days per acre. At this per-acre level, Shining Rock remains one of the most heavily visited areas of the entire National Wilderness System.

At the time of the 1978 study referred to above, wilderness permits were required for entering into Shining Rock Wilderness. There was not, however, an overall use limit, and the permits carried few restrictions. Beyond restricting length of stay to two weeks or less, the permit system appeared to simply be a method of contact between the Forest Service and the wilderness visitor. In the 1980s the permit system was dropped, in part because of the costs of administering the system and the apparent reductions in wilderness use. Today, the Forest Service is attempting to protect the wilderness resource and experience through education by an area map and low-impact brochure, trailhead educational posters, and ranger contacts at trailheads and in the area.

Study Population

The study's target population was all users of Shining Rock Wilderness in 1990. Due to time and budget constraints, however, the actual survey population differed somewhat from the target population. Data collection was limited to the period of June 1 through October 31. Because most use within Shining Rock occurs during the five study months, it was felt the views of the users during the remaining months would not significantly change the study results. Also, the 1978 study covered the June through October period, and one of the objectives of this research was to replicate that earlier study. Finally, all wilderness users who were under 16 years of age were excluded from the study.

Sampling Procedures

Sampling procedures and sample size of the 1978 Shining Rock study shaped the sampling design of this study. As previously stated, Shining Rock Wilderness had a mandatory permit system in place in 1978. A decision was therefore made in 1978 to sample from the permits to obtain a list of study participants. Also, given the estimated variation in the study population and the desired precision of the study conclusions, a goal of obtaining 300 completed questionnaires was established. With an anticipated response rate of 75% on the mailback questionnaire, 400 wilderness users were therefore to be selected. However, since permits are acquired by party leaders and party leaders likely differ from party members on key study variables, steps were taken to gain the

responses from some party members. A 40% sampling fraction of party leaders would have given the necessary 400 study subjects. Instead, 20% of the permits were randomly selected, and these permittees (i.e., the party leader) were asked on their mailback questionnaires to give the names of two of their party members. One of these two were then randomly selected as a study subject.

Because wilderness use in 1978 was higher than expected, this process captured more wilderness participants and yielded more completed questionnaires than expected. A 78.1% response rate from the 547 names resulted in 427 completed survey forms.

In 1990, Shining Rock Wilderness had no mandatory permit system, and use was apparently much lower. Study subjects were sampled at trailheads as they entered or left the area. The wilderness had eight trail entry points: Ivestor Gap trail, Art Loeb trail over Black Balsam, Graveyard Ridge trail-Big East Fork, Big East Fork trail, Shining Creek trail, Art Loeb-Daniel Boone Camp trail, Little East Fork trail, and Fork Mountain trail. Two of these entry points receive almost no use (Graveyard Ridge - Big East Fork trail and Fork Mountain trail) and were therefore not included in the sampling schedule. The six other trail accesses could be covered from four points (Daniel Boone Camp, Ivestor Gap, Big East Fork trail, and Shining Creek trail), and a research technician was placed at these points to contact visitors on sample days. Also, we believed that wilderness visitors enter or leave the area between 8 a.m. and 8 p.m., so this twelve-hour period was covered during sampling.

Sampling intensity was governed by the desire to receive about as many completed questionnaires as was gained in 1978, and to use limited field personnel and financial resources wisely. We therefore chose a cluster-sampling procedure, and randomly chose two one-week sample periods each month. Each sampled cluster of days then included one weekend period (Saturday and Sunday) and one weekday (Monday through Friday) cluster. Each sample day was for 8 hours, and the study's one field technician was assigned to one trailhead each day. This provided 112 hours of sampling each month, or coverage of trailhead access points on 7.7% of the trailhead use hours (i.e., (30 days/month X 4 trailheads X 12 hours/day) ÷ 112). To obtain a sampling fraction more similar to the 1978 study, and to obtain an adequate overall sample size, two sampling adjustments were made. Up to four persons per party (rather than two as in the 1978 study) were contacted and included in the study. This has the advantage of giving adequate coverage of party members, but has the potential disadvantage of giving greater coverage of within-group and less coverage of between-group variance than on the 1978 study. Also, to increase sample size and use research personnel efficiently, the field technician contacted and included in the study both groups that were leaving and entering on sample days.

Selection of sample days, assignment of the field technician to a trailhead, and selection of sampling hours each day was done in the following manner. First, two days were randomly selected each month. That day and the three days before and after that day became the sampling days. Second, each of the four

trailheads was given a number (1 through 4), and these numbers were then randomly ordered. This sequence of trailheads was the pattern of coverage of trailheads from sample day to sample day throughout the entire study. The starting trailhead on the first day of sampling was also randomly chosen. Finally, to gain 12 hr/day sampling coverage while the research technician worked for 8 hours, the 12-hour daily use period was broken down into three blocks: 8 a.m. to 4 p.m.; 12 noon to 8 p.m.; and a 8 a.m. to 12 noon, 4 p.m. to 8 p.m. split period. These three time periods were randomly ordered, and a starting time block was randomly selected for the first sample day. Once the first time block had been selected, the sequence of time periods was followed across all remaining sample days of the study. This sampling procedure resulted in comparable and representative coverage of each trailhead in terms of weekend-weekday, day of the week, and time period during the day (Table 1).

One exception was made to this sampling plan during the months of September and October. Because the research technician was attending graduate classes and because weekday use during these months was considered low, only Mondays and Fridays were included in weekday sampling. Use patterns and visitor characteristics on Tuesdays, Wednesdays, and Thursdays were considered to be comparable to Monday and Friday use. (Monday, Sept. 3, 1990 was Labor Day, and this day was considered a weekend day.)

When the research technician contacted people at the trailheads, he introduced himself, briefly explained the study to them, and asked for their

Table 1. Sampling dates and days of week for Shining Rock Wilderness user survey, 1990.

Date	Day of Week
June 4-June 10	Monday-Sunday
June 24-June 30	Sunday-Saturday
July 1-July 7	Sunday-Saturday
July 14-July 20	Saturday-Friday
Aug. 2-Aug. 8	Thursday-Wednesday
Aug. 21-Aug. 27	Tuesday-Monday
Aug. 31-Sept. 3	Friday-Monday
Sept. 14-Sept. 17	Friday-Monday
Oct. 5-Oct. 8	Friday-Monday
Oct. 19-Oct. 22	Friday-Monday

participation (See Appendix A for the introductory statement). Fewer than ten groups out of the approximately 300 groups contacted refused to participate. The names and addresses of up to four members of the party were obtained and recorded on the contact sheet (see Appendix B); for those groups with more than four people, an effort was made to gain an adequate representation of men and women in the survey. In addition, at the time of contact, the field technician recorded the date, time, location, number of people in the group, type of group, whether the group was entering or leaving the wilderness, where the group was entering or leaving the wilderness, anticipated or actual trail segment use and camping spots selected, and for those leaving, date and time of entrance to the wilderness. Finally, a group identification number was assigned.

Data Collection Instrument

A 14-page questionnaire which took about 40 minutes to complete was the study's primary data collection instrument (see Appendix C). Like the 1978 survey form, its purpose was to obtain the following information from wilderness users: (1) socio-demographic characteristics; (2) past wilderness experience; (3) characteristics of the wilderness trip; (4) perceptions of resource, social, and management problems; (5) satisfaction with the wilderness trip; and (6) preferences for management strategies. The socio-demographic items included gender, age, education, occupation, employment status, income, membership in conservation organizations, and type of place where respondent grew up and now

lives. Items measuring past wilderness experience were frequency of previous visits and years since the first visit to Shining Rock Wilderness and other wilderness areas, number of wilderness visits in the last 12 months, typical number of wilderness visits per year, and number of other wildernesses visited.

Trip characteristic measures included month of the wilderness visit, weekend or weekday visit, number of people in the group, type of group, length of stay of the visit, typical length of stay, method of travel in the wilderness, activity patterns, travel and camping off trails, presence of dogs on trip, use of wood fires and stoves, and number of hiking groups, horse groups, and groups with dogs encountered. A list of about 40 trail, campsite, resource, people, and management problems were included in the questionnaire to assess user perceptions of wilderness problems. Opinions about current use levels, how numbers and characteristics of use compared to expectations, and how conditions of the wilderness compared to previous visits were also measured.

In an effort to gain visitor input for the establishment of standards for the limits of acceptable change planning and management framework, the survey questionnaire asked for the preferred level, the range of acceptable values, and the range of unacceptable values for the following social conditions encountered per day within wilderness: number of groups, number of large groups (more than six people), number of groups camped within sight or sound, number of groups with horses, and number of groups with dogs. User satisfaction was measured in two ways. The first approach was to ask respondents how they felt about current

use levels, how numbers and characteristics of use compared to expectations, how conditions of the wilderness compared to previous visits, and what was their overall level of satisfaction. The second tactic was to present respondents with hypothetical situations in which they would encounter increasing numbers of hiking groups and groups camped nearby, and asked them to indicate their percent of full satisfaction with each of the situations.

Finally, wilderness users were asked if they felt controls on the amount of use were necessary and how they felt about nine possible management strategies to guide or limit use.

Data Collection Procedures

The study questionnaire was mailed to all sample individuals within a month of their trip. The survey packet contained a cover letter (see Appendix D), the questionnaire, and a self-addressed, postage paid, return envelope. One week after the initial mail-out, study participants were sent a postcard reminder (Appendix E). If the questionnaire had not been returned within two weeks of the postcard mailing, another complete survey packet was mailed to the respondent. The packet was identical to the first, except a somewhat stronger cover letter urging cooperation in the study was included (Appendix F). If the sample individuals still had not responded three weeks after the second questionnaire mail-out, a third packet was sent. Again, the materials in the packet were the same except for an ever stronger cover letter (Appendix G).

These follow-up procedures, recommended by Dillman (1978), were carried out to increase the questionnaire response rate.

Response Rates

Table 2 indicates that 586 persons were contacted at the wilderness trailheads and mailed a questionnaire. Of these, 74.9% or 439 individuals returned the completed form. This response rate and overall sample size are very similar to those of the 1978 study, and are believed adequate to permit valid conclusions about the user population. Therefore, no follow-up contacts among the non-respondents were carried out.

Results

Socio-Demographic Characteristics

The majority of current Shining Rock Wilderness users are male, accounting for an estimated 68.9% of all users (Table 3). However, there appears to be a small change toward a greater percentage of female visitors. In 1978, 75.3% were male. The most common age category among visitors is the 30-39 year-old range; almost 30% of all users fell in this category (Table 4). About the same number of users are under and over their 30s. There is a definite trend for visitors to be older in 1990 than in 1978. Mean age has grown from 28.8 to 34.9 years. Today about 35% of all users are 40 years of age or older.

Table 2. Questionnaire response rate for Shining Rock Wilderness study 1978 and 1990.

Year	Mailed out N	Number Returned N	Response %
1978	547	427	78.1
1990	586	439	74.9

As is the case for most wilderness users, Shining Rock visitors are highly educated (Table 5). They are also apparently becoming more highly educated with the passage of the years. For example, 31.2% of respondents had attended graduate school in the 1978 study. This increased to 44.3% in 1990. About 52% were college graduates in 1978, and this number had grown to 59% in 1990. Reflecting the high education levels, most wilderness visitors are professional or technical workers, managers, or administrators in both 1978 and 1990 (Table 6). These job categories accounted for about 60% of all users in both study years. Interestingly, while numbers were low in both years, there seemed to be substantial increases in the percentage of clerical or sales workers, laborers or service workers, and farmers from 1978 to 1990. Only about three-fourths of the wilderness users were working in the labor force in both study years (Table 7). Somewhat surprisingly, student numbers were quite low across both study years, but did increase from 11.5% in 1978 to 16.1% in 1990. The number of retirees, while low, increased substantially from 3.8% to 5.7%. Household income was not measured in 1978, but was high among 1990 visitors (Table 8). Almost 54% of the visitors had incomes between $25,000 and $75,000. About 20% of respondents were in the $50,000 to $75,000 range, and more than 15% had incomes over $75,000 per year.

Shining Rock Wilderness users in 1978 and 1990 grew up in remarkably similar places. Table 9 indicates that the greatest percentage of users, about 20%, in both study years grew up in a city of 2,500 to 25,000. In both years, about 37%

grew up in the farm, country-not a farm, and small town categories. The remainder, just over 40%, grew up in large cities or suburbs of large cities in both 1978 and 1990. As is the case for most Americans, far more wilderness users live currently in urban areas than grew up there. The most common place for current Shining Rock Wilderness visitors to live is in a city of 25,000 to 100,000 people; 27.4% of all respondents lived there (Table 10). Almost 53% of all visitors lived in cities of this size and larger, or suburbs of such places. Wilderness users lived in reasonably similar kinds of places at the time of the 1978 and 1990 studies. Differences were much fewer people living on farms in 1990 and many more people living in cities of 25,000 to 100,000 people.

Membership by Shining Rock Wilderness visitors in conservation organizations remained remarkably the same across the 1978 and 1990 time period. In both years, membership was just under 40% for the respondents (Table 11).

Table 3. Gender of Shining Rock Wilderness users, 1978 and 1990.

Gender	1978 N[1]	1978 %	1990 N	1990 %
Male		75.3	301	68.9
Female		24.7	136	31.1
Total		100.0	437	100.0

[1] Absolute frequencies in the 1978 study were adjusted to avoid overrepresentation of party leaders. The 1978 percentage breakdown of gender categories reflects the adjusted figures, and is an estimate of the true population.

Table 4. Age of Shining Rock Wilderness users, 1978 and 1990.

Age	1978 N	1978 %	1990 N	1990 %
20 or under	66	15.6	38	8.7
21-29	174	41.2	120	27.5
30-39	94	22.2	128	29.4
40-49	53	12.5	106	24.3
50 and over	36	8.5	44	10.1
Total	423	100.0	436	100.0

Mean age: 1978 = 28.8
1990 = 34.9

Table 5. Education levels of Shining Rock Wilderness users, 1978 and 1990.

Education level	1978 N	1978 %	1990 N	1990 %
Less than high school	13	3.1	26	6.0
High school	79	18.8	54	12.5
Some college	110	26.2	97	22.4
College graduate	87	20.7	64	14.8
Graduate study	131	31.2	192	44.3
Total	420	100.0	433	100.0

Mean education level 1978 = 14.7 years
1990 = 15.1 years

Table 6. Occupation of Shining Rock Wilderness users, 1978 and 1990.

Occupation	1978 N	1978 %	1990 N	1990 %
Professional, technical worker	140	36.6	138	43.3
Manager, administrator (non self-employed)	107	27.9	54	16.9
Self-employed businessman or artisan	34	8.9	7	2.2
Clerical or sales worker	21	5.5	38	11.9
Craftsman or foreman	24	6.3	10	3.1
Operative	18	4.7	4	1.3
Laborer or service worker	37	9.6	54	16.9
Farmer or farm managers	2	.5	10	3.1
Military[1]			1	.3
Miscellaneous[1]			3	.9
Total	383	100.0	319	100.0

[1] These categories were not included in the 1978 Shining Rock user survey.

Table 7. Job status of Shining Rock Wilderness users, 1978 and 1990.

Job status	1978 N	1978 %	1990 N	1990 %
Working	321	77.0	318	73.1
Temporarily laid off	2	.5	1	.2
Unemployed	19	4.6	9	2.1
Retired	16	3.8	25	5.7
Full-time homemaker	11	2.6	12	2.8
Student	48	11.5	70	16.1
Total	417	100.0	435	100.0

Table 8. Household income levels of Shining Rock Wilderness users, 1978 and 1990.

Income level (dollars)	1978[1] N	1978[1] %	1990 N	1990 %
Less than 5,000			19	4.75
5,000 to 9,999			17	4.25
10,000 to 14,999			24	6.0
15,000 to 19,999			25	6.25
20,000 to 24,999			38	9.5
25,000 to 34,999			67	16.75
35,000 to 49,999			69	17.25
50,000 to 74,999			79	19.75
75,000 to 100,000			29	7.25
Over 100,000			33	8.25
Total			400	100.0

[1] Income level data were not collected in the 1978 Shining Rock Wilderness user survey.

Table 9. Place where Shining Rock Wilderness users grew up, 1978 and 1990.

Type of place	1978 N	1978 %	1990 N	1990 %
Farm	45	10.9	47	10.8
Country, not a farm	72	17.4	70	16.1
Town, under 2500	39	9.4	43	9.9
Small city, 2500-25,000	92	22.2	87	20.0
City, 25,000 - 100,000	56	13.5	78	17.9
Suburb of large city	74	17.9	75	17.2
Large city, over 100,000	36	8.7	36	8.3
Total	414	100.0	436	100.0

Table 10. Type of place where Shining Rock Wilderness users currently live, 1978 and 1990.

Type of place	1978 N	1978 %	1990 N	1990 %
Farm	28	6.7	16	3.7
Country, not a farm	81	19.4	89	20.5
Town, under 2500	23	5.5	27	6.2
Small city, 2500-25,000	81	19.4	73	16.8
City, 25,000 - 100,000	80	19.2	119	27.4
Suburb of large city	58	11.5	50	11.5
Large city, over 100,000	66	13.8	60	13.8
Total	417	100.0	434	100.0

Table 11. Membership by Shining Rock Wilderness users in conservation organizations, 1978 and 1990.

Membership	1978 N	1978 %	1990 N	1990 %
Yes	160	37.7	170	39.2
No	264	62.3	264	60.8
Total	424	100.0	434	100.0

Past Wilderness Experience

Several dimensions of past wilderness experience were measured including amount and intensity of previous visits to Shining Rock Wilderness and to other wildernesses, years since the first visit to Shining Rock and other wildernesses, and number of other wildernesses visited. Shining Rock wilderness visitors were quite experienced in 1978 and somewhat more experienced in 1990 (Tables 12 and 13). About 65% of all study participants had made at least some previous visits to Shining Rock Wilderness in both the 1978 and 1990 studies. Slightly more (7.7% versus 5.8%) had made more than 20 visits in 1990 than in 1978. Past experience with other areas increased substantially from 1978 to 1990, those with at least some experience with other wildernesses grew from about 57% to 77%. Intensity of use of Shining Rock Wilderness and other wildernesses in the last 12 months was not high. For example, about 80% of all 1990 respondents had visited Shining Rock two times or less during this period; almost half had made no previous visit in the last year. Percentages were similar for visits to other wildernesses. About 77% of study participants in both 1978 and 1990 had two or fewer visits to areas other than Shining Rock in the last 12 months (Table 14). By far the most common frequency of the number of wilderness visits per year is two to five visits. About 47% of respondents were in this category. The next most common number of visits per year was about one visit, with about 18% in this category (Table 15).

Most visitors to Shining Rock Wilderness are relative newcomers. About 58% of all respondents made their first trip two or fewer years ago (Table 16); about 16% have been visiting Shining Rock Wilderness for more than 10 years. Respondents, however, have been visiting other wildernesses for a longer period of time. About 44% had made their first visit to another wilderness two or fewer years ago; those who first visited a wilderness area more than 10 years ago numbered 25%. Finally, the most common number of other wilderness areas visited by 1990 Shining Rock Wilderness users was three to five; about one-third of all respondents fell in this category (Table 17). Far more respondents visited fewer than three other areas (i.e., 45%) than visited six or more other wildernesses (i.e., 21%).

Table 12. Number of Shining Rock Wilderness users with and without previous experience in wilderness, 1978 and 1990.

Amount of previous experience by area	1978 N[1]	1978 %	1990 N	1990 %
Shining Rock Wilderness				
None		37.6	147	33.6
Some		62.4	291	66.4
Total		100.0	438	100.0
Other wilderness areas				
None	243	42.6	98	22.5
Some	182	56.9	338	77.5
Total	427	100.0	436	100.0

[1] Absolute frequencies in the 1978 study were adjusted to avoid overrepresentation of party leaders. The 1978 percentage breakdown of experience level categories reflects the adjusted figures, and is an estimate of the true population.

Table 13. Number of previous trips into Shining Rock Wilderness by users, 1978 and 1990.

Number of trips	1978 N	1978 %	1990 N	1990 %
0	138	34.7	147	35.1
1-5	140	35.2	140	33.4
6-10	54	13.5	59	14.1
11-20	43	10.8	41	9.8
21-50	13	3.3	20	4.8
51 or more	10	2.5	12	2.9
Total	398	100.0	419	100.0

Table 14. Number of wilderness trips taken by Shining Rock Wilderness users in the last 12 months, 1978 and 1990.

Areas visited/ number of trips	1978 N	1978 %	1990 N	1990 %
To Shining Rock Wilderness[1]				
0			208	48.5
1-2			133	31.0
3-5			49	11.4
6-10			23	5.4
Over 10			16	3.7
Total			429	100.0
To other wilderness areas				
0	243	58.3	184	41.9
1-2	76	18.2	158	36.0
3-5	56	13.4	66	15.0
6-10	27	6.5	18	4.1
Over 10	15	3.6	13	3.0
Total	417	100.0	439	100.0

[1] The 1978 user survey did not include this question.

Table 15. Years since first visit to Shining Rock Wilderness and other wilderness areas, 1978 and 1990.

Years since visit to area	1978[1] N	1978[1] %	1990 N	1990 %
To Shining Rock Wilderness				
0			151	35.6
1-2			96	22.6
3-5			49	11.6
6-10			59	13.9
11-20			52	12.3
More than 20			17	4.0
Total			424	100.0
To other wilderness areas				
0			106	25.5
1-2			77	18.6
3-5			52	12.5
6-10			76	18.3
11-20			87	21.0
More than 20			17	4.1
Total			415	100.0

[1] This question was not asked in the 1978 Shining Rock Wilderness user survey.

Table 16. Number of other wilderness areas the 1990 Shining Rock Wilderness users have visited.

Number of areas	1978[1] N	1978[1] %	1990 N	1990 %
0			95	21.6
1-2			105	23.9
3-5			147	33.6
6-10			42	9.6
Over 10			50	11.4
Total			439	100.0

[1] This question was not included in the 1978 user survey.

Table 17. Typical frequency of trips to a wilderness area by Shining Rock Wilderness users - 1990.

Typical frequency/year[1]	1978[2] N	1978[2] %	1990 N	1990 %
More than 10			45	13.0
6 to 10			40	11.6
2 to 5			161	46.5
About 1			61	17.6
About 1 per 2 years			22	6.4
Less than once every 2 years			17	4.9
Total			346	100.0

[1] 95 individuals who had not been to wilderness areas besides Shining Rock were not included in this question.

[2] This question was not included in the 1978 user survey.

Wilderness Trip Characteristics

Time of use. The most heavily used months in Shining Rock Wilderness in 1990 were June, September, and October. Between 20% and 25% of all study participants visited the area in each of these months. The percentage of total use in July and August, typically the high use vacation months, was lower than expected and may be due to hot weather and large amount of rain. When compared to 1978, June use in 1990 is much higher and July use is much lower. Fall use was high in both years (Table 18). There was a substantial shift in the distribution of use across weekends and weekdays from 1978 to 1990. In 1978 about 60% of all users spent at least a portion of their visit to Shining Rock Wilderness on a weekend; this increased about 70% in the 1990 study (Table 19).

Table 18. Distribution of Shining Rock Wilderness use by month, 1978 and 1990.

Month	1978[1] N	1978[1] %	1990[2] N	1990[2] %
June	33	7.8	106	22.9
July	111	26.3	70	15.1
August	92	21.8	86	18.6
September	106	25.1	93(+12)	22.7
October	81	19.0	84(+12)	20.7
Total	423	100.0	463	100.0

[1] June sampling included only the June 15-30 time period in 1978.

[2] September and October use estimates in 1990 have each been weighted by 12 persons to reflect number of study participants that were missed by not sampling on Tuesdays, Wednesdays, and Thursdays during these months. Estimates of daily use on these weekdays were based on the average daily use of the area on Mondays and Fridays during September and October, excluding Labor Day.

Table 19. Distribution of Shining Rock Wilderness use by weekend-weekday, 1978 and 1990.

Time of week	1978 N	1978 %	1990[1] N	1990[1] %
Weekday (Mon.-Fri.)	169	39.6	147	29.5
Weekend (Sat.-Sun.)	125	29.3	273	47.6
Both	133	31.1	114	22.9
Total	427	100.0	498	100.0

[1] Weekday use has been weighted by 24 persons to reflect number of weeday users that were missed by not sampling on Tuesdays, Wednesdays, and Thursdays in September and October. Estimates of daily use on these weekdays were based on the average daily use of the area on Mondays and Fridays during September and October, excluding Labor Day.

Group size, type of group, length of stay, type of travel. Most user groups in Shining Rock Wilderness are small in size, and getting smaller (Table 20). For example, in 1990 almost 13% of all user groups were lone individuals. About 49% of all groups in 1978 were composed of one or two individuals; this number increased to 58% in 1990. The large (5-10 people) and the very large (11 or more people) groups declined somewhat, dropping from 17.2% to 13.8% for the large groups and from 7.2% to 5.1% for the very large groups. Mean group size fell from 4.35 persons per group in 1978 to 3.54 persons in 1990. Most user groups in 1990 were families (36.2%), followed closely by groups of friends (32.1%). Just over 8% of the parties represented organized groups of some type (Table 21).

Length of stay in Shining Rock Wilderness is short and getting shorter. In 1978, about one-third of all visitors were day users. This increased to 46.2% in 1990 (Table 22). Among overnight users, 45.8% stayed just one night in 1978. The number which stayed this short period of time increased to 54.6% in 1990 (Table 23). In 1978, about 28% of study participants spent three or more nights during their visit; this dropped to about 9% in 1990. Mean nights stayed dropped from 1.9 to 1.6 nights for overnight users from 1978 to 1990. Among day users in 1990, about two-thirds spent from five to eight hours in the wilderness, but almost 30% just spent from one to four hours (Table 23). Typical lengths of stay on visits to wilderness areas in general were short, but not quite as short as for visits to Shining Rock Wilderness. The trend of change is once again toward shorter visits. For example, in 1978 only about 29% of respondents were typically day

users. This increased to 44% in 1990 (Table 24). Groups spending more than two nights on the typical visit dropped from 17.7% in 1978 to 7.3% in 1990.

The primary method of travel through Shining Rock Wilderness is hiking. About 99% of all users were hikers in 1978; the comparable figure was 97% in 1990. There is almost no horse use in Shining Rock Wilderness, but seven people in the 1990 sample (1.6%) used llamas (Table 25). Just over 20% of the 1990 Shining Rock Wilderness visitors said they purposefully travelled off trail (Table 26). The number of miles travelled away from trails was, however, short. About 74% of off-trail hikers travelled for one mile or less. Only about 7% of the off-trail hikers camped away from the trail.

In recent years there has been increasing concern about the potential environmental and social impacts of dogs in wilderness, so respondents in 1990 were asked if they brought a dog to the wilderness. About 13% of the Shining Rock Wilderness users reported bringing a dog on their trip (Table 27).

Table 20. Number of people in Shining Rock Wilderness user groups, 1978 and 1990.

People/group	1978 N	1978 %	1990 N	1990 %
1-2	164	49.3	172[1]	57.9
3-4	88	26.4	69	23.2
5-10	57	17.2	41	13.8
11 or more	24	7.2	15	5.1
Total	333	100.0	297	100.0

Mean group size: 1978 = 4.35
1990 = 3.54

[1] 38 groups, or 12.8%, were lone individuals.

Table 21. Breakdown of type of group represented by Shining Rock Wilderness users - 1990[1].

	1990	
	N	%
Friends	95	32.1
Family	107	36.2
Family and friends	31	10.5
Club (school, church, scouts)	24	8.1
Alone	38	12.8
Other	1	.3
Total	296	100.0

[1] Group type data were not collected in the 1978 Shining Rock Wilderness user survey.

Table 22. Day vs. overnight use by Shining Rock Wilderness users, 1978 and 1990.

Type of use	1978 N	1978 %	1990 N	1990 %
Day	138	32.3	203	46.2
Overnight	289	67.7	236	53.8
Total	427	100.0	439	100.0

Table 23. Length of stay of visit by Shining Rock Wilderness users, 1978 and 1990.

Length of stay	1978 N	1978 %	1990 N	1990 %
Day users (hrs)[1]				
1 to 4			45	29.0
5 to 8			105	67.7
Over 8			5	3.3
Total			155	100.0
Overnight users (nights)				
1	132	45.8	125	54.6
2	105	36.4	83	36.2
3	33	11.5	16	7.0
4-7	14	4.9	4	1.7
8 or more	4	1.4	1	.4
Total	288	100.0	229	100.0

[1] Day users were not asked their length of stay in hours in the 1978 survey.

Mean nights spent (among overnight visitors): 1978 = 1.9
1990 = 1.6

Table 24. Average length of typical visit to wilderness areas by Shining Rock Wilderness users, 1978 and 1990.

Typical length of stay	1978 N	1978 %	1990 N	1990 %
A few hours	26	6.3	86	19.6
Full day	93	22.5	107	24.4
1 or 2 nights	221	53.5	213	48.6
More than 2 nights	73	17.7	32	7.3
Total	413	100.0	438	100.0

Table 25. Type of travel within Shining Rock Wilderness, 1978 and 1990.

Type of travel on visit	1978 N	1978 %	1990 N	1990 %
Hiked, carried equipment	423	99.3	424	96.6
Hiked, leading horses, mules, or burros	0	0	1	0.2
Hiked, leading llamas[1]			7	1.6
Rode horses	3	0.7	1	0.2
Other	0	0	6	1.4
Total	426	100.0	439	100.0

[1] This item was not included in the 1978 Shining Rock Wilderness user survey.

Table 26. Extent of travel off trails by Shining Rock Wilderness users - 1990.

Purposefully travelled off trail	N	%
Yes	94	21.6
No	341	78.4
Total	435	100.0
Miles travelled away from trail		
Less than 1	5	5.4
1	64	68.8
2	9	9.7
3	7	7.5
4-5	6	6.4
6-10	1	1.1
More than 10	1	1.1
Total	93	100.0
Nights camped in a trailless area		
0	82	93.2
1	4	4.5
2	2	2.3
Total	88	100.0

Table 27. Number of Shining Rock Wilderness users with dogs on their visit - 1990.

Brought dog(s)	N	%
Yes	58	13.2
No	380	86.8
Total	438	100.0

Use of access points and trail segments for travel and camping. Use of the eight Shining Rock Wilderness access points was very uneven in 1990, just as it was in 1978. For example, between 45% and 50% of all users both entered and left the wilderness at Ivestor Gap in both 1978 and 1990 (Table 28 and Figure 1 on page 11). The Shining Creek and Big East Fork trailheads accounted for another 30% of entries and exits in 1978. Use of these two trailheads increased to about 45% of all use in 1990, with use of the Big East Fork trailhead almost doubling between 1978 and 1990. Use of the Art Loeb-Daniel Boone Camp trailhead was low in 1978 (about 4% of all entries and exits), but the number decreased even farther to one to two percent in 1990. The Little East Fork trailhead increased in use from 1.5% to over 5% across the two study years.

Use of Shining Rock Wilderness area's many trail segments was also very unevenly distributed. Two trails (the Shining Rock Trail between Ivestor Gap and Shining Rock Gap, and the Art Loeb Trail between Ivestor Gap and Shining Rock Gap) were used by almost 90% of all hikers in 1978. This concentration of use on these two trails dropped to 75% in 1990 (Table 29 and Figure 2). Virtually all of this drop occurred on the Art Loeb trail. Hiking use of two trail segments, the Old Butt Knob Trail and the Little East Fork Trail, declined substantially from 1978 to 1990. More than 30% of all visitors used these tracks in the 1978 study, but 15% or fewer travelled them in 1990. The increase in the use of the Little East Fork trail at first glance seems contradictory. This apparent discrepancy can be explained by the much smaller use in 1990 than in 1978 of the

portion of the Little East Fork trail that is accessed off the Ivestor Gap trail near Shining Rock Gap within the wilderness. The Big East Fork Trail, the Shining Creek Trail, and the Art Loeb Trail between Shining Rock Gap and Deep Gap were popular across both study years, with about 30% of all hikers using these trails in 1978 and 1990.

Camping use along the various trail segments somewhat reflects the distribution of hiking use, but concentration of camping (except at Shining Rock Gap) is less. Distribution of camping throughout the system has also apparently not changed much between 1978 and 1990. About half of all campers stayed at Shining Rock Gap at some time during their visit in 1990. Almost 20% camped along the Art Loeb Trail between Ivestor Gap and Shining Rock Gap (in particular at Flower Gap), and another 15% stayed along the Big East Fork Trail across both studies. About 10% of all campers in 1978 stayed on each of the Shining Creek, Old Butt Knob, and the Art Loeb (between Shining Rock Gap and Deep Gap) Trails. The Shining Creek Trail retained its camping use to 1990, but camping use along the other two trail segments declined (Table 29).

Table 28. Use of entering and exiting points, Shining Rock Wilderness users, 1978 and 1990.

Access Points	1978				1990			
	Entry		Exit		Entry		Exit	
	N	%	N	%	N	%	N	%
Shining Creek trail	90	22.7	91	23.4	77	25.9	80	26.9
Big East Fork trail	30	7.6	38	9.8	54	18.2	54	18.2
Graveyard Ridge trail	5	1.2	11	2.8	1	.3	1	.3
Ivestor Gap	194	48.9	175	45.0	140	47.1	138	46.5
Ivestor Gap-Fork Mountain trail	54	13.6	49	12.6	1	.3	1	.3
Fork Mountain trail	1	.2	1	.3	1	.3	2	.7
Little East Fork trail	6	1.5	6	1.5	15	5.1	17	5.7
Art Loeb trail-Daniel Boone camp	17	4.3	18	4.6	7	2.4	4	1.3
Total	397	100.0	389	100.0	297	100.0	297	100.0

Table 29. Trail segment use by Shining Rock Wilderness visitors for hiking and camping, 1978 and 1990[1,2,3].

Trail segment	1978				1990			
	Hikers		Campers		Hikers		Campers	
	N	%	N	%	N	%	N	%
1	218	51.1	81	19.0	111	37.5	29	17.5
2	164	38.4	6	1.4	111	37.5	0	0
3	98	23.0	66	15.5	20	6.8	5	3.0
4					62	20.9	15	9.0
5	125	29.3	8	1.9	87	29.4	3	1.8
6	125	29.3	43	10.1	77	29.4	8	4.8
7					53	17.9	10	6.0
8	159	37.2	48	11.2	30	10.1	6	3.6
9	143	33.5	51	11.9	88	29.7	11	6.6
10	18	4.2	0	0	12	4.1	2	1.2
11	46	10.8	22	5.2	21	7.1	8	4.8
12	139	32.6	31	7.3	19	6.4	0	0
13					19	6.4	3	1.8
14	7	1.6	5	1.2	3	1.0	2	1.2
15							53	31.9
16					47	15.9	2	1.2
17	9	2.1	7	1.6	0	0	0	0

[1] Trail Segment Key:

1 Art Loeb trail between Ivestor Gap and Shining Rock Gap
2 Ivestor Gap trail between Ivestor Gap and Shining Rock Gap
3 Big East Fork trail between Ivestor Gap and Nobreeches Ridge
4 Big East Fork trail between Rt. 276 and Nobreeches Ridge
5 Shining Creek trail between Rt. 276 and Old Butt Knob trail
6 Shining Creek trail between Old Butt Knob trail and Daniels Cove
7 Shining Creek trail between Daniels Cove and Shining Rock Gap
8 Old Butt Knob trail
9 Art Loeb trail between Shining Rock Gap and Deep Gap
10 Art Loeb trail between Deep Gap and Daniel Boone Camp
11 Cold Mountain trail
12 Little East Fork trail between Daniel Boone camp and Shining Rock Creek
13 Little East Fork trail between Shining Rock Creek and Ivestor Gap trail
14 Fork Mountain trail
15 Shining Rock Gap
16 Off trail
17 Trail to camp at Deep Gap

[2] Trail segments 3 and 4; 6 and 7; and 12 and 13 were combined in the 1978 study.

[3] The categories, Shining Rock Gap (15) and off trail (16), were not included in the 1978 study. The category, side trail to camp at Deep Gap (17), was not included in the 1990 study because the trail is no longer used.

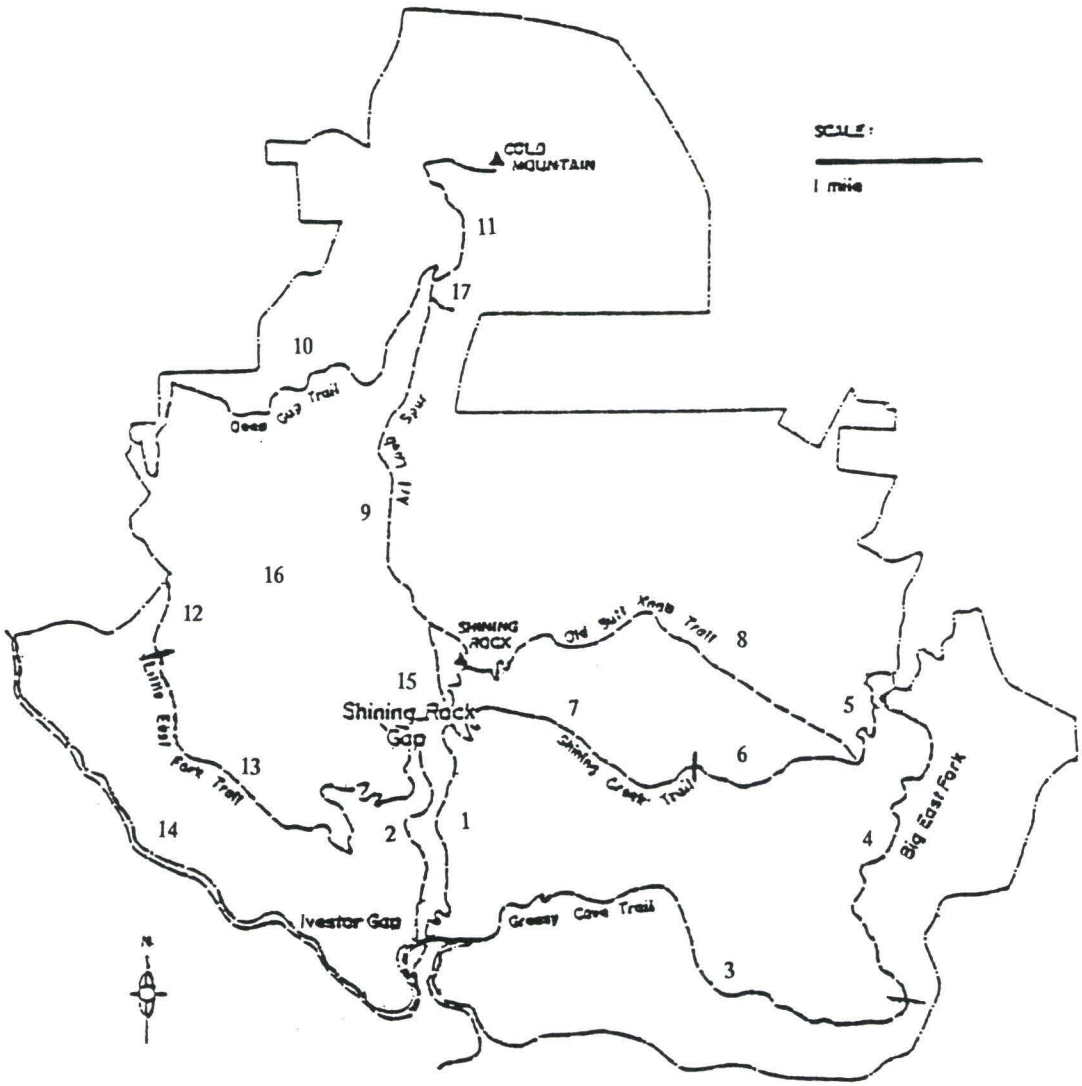

Figure 2. Shining Rock Wilderness with Trail Segments
(Key to trail segments on Table 29.)

User activities and use of wood fires and campstoves. The 1990 questionnaire permitted Shining Rock Wilderness users to indicate whether various activities were a major reason for the visit, whether the respondents participated in the activities but they were not a primary reason for the trip, or did not participate in the activities. Table 30 indicates that hiking on trails and camping were most often listed as a primary reason for the visit. Following these in importance were spending time relaxing and doing chores in camp, spending time all alone, and nature study. Most common activities participated in but not a primary reason for the visit were talking to individuals in other groups, nature study, photography, spending time relaxing and doing chores in camp, hiking off trails, spending time all alone, and collecting berries or mushrooms. There was almost no participation in fishing, hunting, horseback riding, and rock climbing. (The low participation in hunting likely reflects the June through October sampling season, a time when most hunting seasons are closed.) The 1978 survey asked the activity participation question in a slightly different way, but it appears that type of use of Shining Rock has not changed much across the two study periods. A possible exception is increased participation in nature study in 1990 compared to 1978.

The 1990 Shining Rock Wilderness survey form also explored support for and use of wood fires versus gas stoves in the wilderness. About 70% of all wilderness users said they prefer a stove over a wood fire for cooking in the wilderness (Table 31). Among campers, 84.3% used a gas stove for cooking

during their visit; the remainder cooked over a fire. About 37% of the campers had no wood fire on their trip into the wilderness. Among the remainder who did, the most common number of fires was one or two (Table 32). Of the groups that had a wood fire, about 75% had at least one fire that was used simply for sitting around and enjoying and not for cooking (Table 32).

Table 30. Kind and importance of activities participated in during visit by Shining Rock Wilderness users - 1990.

Activity[1]	Activity was the major reason for visit		Participated in the activity but not major reason for visit	
	N	%	N	%
Fishing	21	4.9	1	.2
Hunting	11	2.6	1	.2
Camping	240	56.1	14	3.3
Hiking on trails	387	90.4	34	7.9
Hiking off trails	49	11.4	120	28.0
Horseback riding	2	.5	1	.2
Rock climbing (using special equipment)	6	1.4	13	3.0
Nature study	71	16.6	209	48.8
Photography	42	9.8	168	39.3
Swimming	36	8.4	61	14.3
Talking to individuals in other groups	11	2.6	233	54.4
Spending time alone	87	20.3	109	25.5
Spending time in camp (relaxing, performing camp chores)	102	23.8	141	32.9
Collecting berries or mushrooms	41	9.6	104	24.3

[1] Eleven people failed to indicate any activity participation in the wilderness, so N size was reduced to 428.

Table 31. Shining Rock Wilderness users' preferences for and use of wood fires and stoves - 1990.

	N	%
Preference for cooking:		
Wood fire	125	30
Stove	291	70
Total	416	100
Used stove for cooking (campers):		
Yes	199	84.3
No	37	15.7
Total	236	100.0

Table 32. Number and kind of wood fires used by Shining Rock Wilderness visitors - 1990.

Number of wood fires	Total number of wood fires[1]		Wood fires used for enjoyment - not cooking	
	N	%	N	%
0	86	36.8	37	25.3
1	66	28.2	61	41.8
2	52	22.2	33	22.6
3	20	8.5	10	6.8
4	5	2.1	3	2.1
5 or more	5	2.2	2	1.4
Total	234	100.0	146	100.0

[1] Shining Rock Wilderness users reported having a total of 292 wood fires. Of these 193, or 66%, were for enjoyment, not cooking. NOTE: These data are individual responses, not group responses. Thus, there is some double counting of fires.

Numbers and types of groups encountered. The final characteristic of Shining Rock users covered in both the 1978 and 1990 surveys were the numbers and types of groups encountered. The 1990 wilderness users generally saw more other user groups on each day of their visit than did the 1978 visitors (Table 33). For example, between 37% and 44% of the 1978 Shining Rock visitors saw two groups or fewer on each day of their visit. The percentage of the 1990 visitors that reported seeing so few groups on each day of their trip ranged from 25% to 31%. About one third of the respondents across both study years reported seeing three to five other groups daily. Far more respondents reported seeing six or more groups daily in 1990 than in 1978. For example, between 22% and 30% reported these high levels of daily contacts in 1978; comparable percentages ranged from 38 to 50 in 1990. Mean number of groups encountered per day grew from 5.44 in 1978 to 6.51 in 1990.

The number of large groups (groups larger than six people) encountered in 1990 more nearly resembled that of 1978 (Table 34). However, the 1990 visitors appeared to see slightly more large groups. For example, the mean number of large groups contacted in 1978 grew from 1.18 per day in 1978 to 1.59 in 1990. In 1978, about 47%, 40%, and 10% saw zero, one to two, and three to five large groups, respectively, on a typical day of their visit. These figures changed to between 31% and 45% seeing no large groups, 34% to 46% seeing one to two such groups, and about 15% encountering three to five large groups in 1990.

Campers also reported more other groups camped within sight or sound of them in 1990 than in 1978 (Table 35). Mean number of groups camped nearby grew from a nightly average of 1.34 in 1978 to 1.57 in 1990. Groups who camped alone ranged from 51% to 79% across the days of the visit in 1978; comparable percentages ranged from 46% to 70% in 1990. A greater percentage of the 1990 users camped near one to two and three to five other groups than did the 1978 users. For example, groups camped near one to two other groups in 1990 ranged from 20% to 32%. This number ranged from 13% to 29% in 1978. There was more variation in percent of respondents who camped near three to five other groups. The 1978 percentages ranged from 4% to 14%; comparable figures for 1990 ranged from 7% to 22%.

The 1978 survey did not ask respondents how many groups they saw which had horses or dogs. The vast majority (e.g., more than 82%) of all respondents in 1990 reported seeing no horse groups across each day of their visit (Table 36). On average, study participants reported seeing .19 horse groups per day. Still, more persons reported seeing groups with horses than themselves had horses on their visit. Recall that fewer than 1% if our sample rode or led horses on their wilderness trip (see Table 25 on page 51), but for the first three days of the visit, between 9% and 15% of the visitors said they saw one horse group. Another 2% to 3% saw two or more horse groups.

Respondents also reported seeing far more groups with dogs than they themselves had brought dogs (Table 37). Average number of groups seen per day

with dogs was 1.16. Between 47% and 60% of the respondents saw at least one group with a dog across the various days of the visit. For the first three days of the visit, between 12% and 16% saw three or more groups with dogs daily. This contrasts with the finding of 87% of the respondents who said they brought no dog. This apparent discrepancy between numbers who brought dogs and numbers reporting seeing groups with dogs might be explained by a variety of reasons. Wilderness users at Shining Rock see an average of 6.5 groups per day, and this increases the likelihood of seeing a group with a dog. Also, a respondent could be part of a group with a dog, but report that he or she did not bring a dog to the wilderness. Another possibility is that dogs, like horses, make definite impressions on wilderness users, and respondents' estimates of number seen are greater than are actually there.

Table 33. Number of groups seen in Shining Rock Wilderness by 1978 and 1990 visitors.

Number of groups seen	1978						1990							
	Day 1		Day 2		Day 3 and beyond		Day 1		Day 2		Day 3		Day 4 and beyond	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
0	37	9.3	15	5.6	14	12.3	36	8.4	9	4.5	8	10.3	3	18.8
1-2	114	28.5	83	31.0	36	31.6	95	22.2	40	20.0	13	16.7	9	56.3
3-5	130	32.5	96	35.8	39	34.2	133	31.1	51	25.5	26	33.3	1	6.3
6-10	84	21.0	48	17.9	12	10.5	107	25.0	64	32.0	22	28.2	1	6.3
11-20	14	3.5	18	6.7	11	9.7	44	10.3	25	12.5	6	7.7	2	12.5
More than 20	21	5.2	8	3.0	2	1.7	13	3.0	11	5.5	3	3.8	0	0
Total	400	100.0	268	100.0	114	100.0	428	100.0	200	100.0	78	100.0	16	100.0

Mean number of groups seen per day: 1978 = 5.44
1990 = 6.51

Table 34. Number of large groups seen in Shining Rock Wilderness by 1978 and 1990 visitors[1].

Number of large groups seen	1978						1990							
	Day 1		Day 2		Day 3 and beyond		Day 1		Day 2		Day 3		Day 4 and beyond	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
0	179	47.2	121	47.1	49	46.3	182	44.0	60	31.1	33	44.6	11	57.9
1-2	156	41.2	106	41.3	43	40.6	161	38.9	89	46.1	25	33.8	5	26.3
3-5	34	9.0	24	9.3	11	10.4	59	14.3	29	15.0	11	14.9	2	10.5
6-10	10	2.6	6	2.3	1	0.9	7	1.7	12	6.2	5	6.8	1	5.3
11-20	0	0.0	0	0.0	1	0.9	4	1.0	3	1.6	0	0.0	0	0.0
More than 20	0	0.0	0	0.0	1	0.9	1	0.2	0	0.0	0	0.0	0	0.0
Total	379	100.0	257	100.0	106	100.0	414	100.0	193	100.0	74	100.0	19	100.0

[1] Large groups: more than six people.

Mean number of large groups seen per day: 1978 = 1.18
1990 = 1.59

Table 35. Number of groups camping within sight or sound reported by Shining Rock Wilderness visitors, 1978 and 1990.

Number of camper groups seen	1978						1990							
	Day 1		Day 2		Day 3 and beyond		Day 1		Day 2		Day 3		Day 4 and beyond	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
0	137	51.0	138	61.0	72	79.1	127	46.7	74	46.3	42	70.0	12	70.6
1-2	77	28.6	49	21.7	12	13.2	87	26.3	42	26.3	12	20.0	5	29.4
3-5	37	13.8	22	9.7	4	4.4	43	21.9	35	21.9	4	6.7	0	0.0
6-10	16	5.9	16	7.1	2	2.2	10	3.1	5	3.1	1	1.7	0	0.0
11-20	2	0.7	1	0.4	1	1.1	5	1.9	3	1.9	0	0.0	0	0.0
More than 20	0	0.0	0	0.0	0	0.0	0	0.6	1	0.6	1	1.7	0	0.0
Total	269	100.0	226	100.0	91	100.0	272	100.0	160	100.0	60	100.0	17	100.0

Mean number of groups within sight or sound of campsite per day: 1978 = 1.34
1990 = 1.57

Table 36. Number of groups with horses seen in Shining Rock Wilderness by 1990 visitors[1].

Number of horse groups seen	1990							
	Day 1		Day 2		Day 3		Day 4 and beyond	
	N	%	N	%	N	%	N	%
0	338	82.8	157	84.4	68	88.3	17	94.4
1	60	14.7	24	12.9	7	9.1	0	0.0
2	9	2.2	5	2.7	1	1.3	1	5.6
3	0	0.0	0	0.0	1	1.3	0	0.0
4	1	0.2	0	0.0	0	0	0	0.0
Total	408	100.0	186	100.0	77	100.0	18	100.0

[1] The 1978 Shining Rock user survey did not include this question.
Mean number of horse groups seen per day: 1990 = .19.

Table 37. Number of groups with dogs seen in Shining Rock Wilderness by 1990 visitors[1].

Number of groups seen with dogs	1990							
	Day 1		Day 2		Day 3		Day 4 and beyond	
	N	%	N	%	N	%	N	%
0	202	48.7	77	39.7	41	52.6	10	58.8
1	111	26.7	55	28.4	17	21.8	3	17.6
2	52	12.5	30	15.5	9	11.5	3	17.6
3	30	7.2	14	7.2	3	3.8	0	0.0
4	4	1.0	12	6.2	3	3.8	3	5.9
5	7	1.7	1	0.5	1	1.3	0	0.0
6 or more	9	2.1	5	2.5	4	5.2	0	0.0
Total	415	100.0	194	100.0	78	100.0	17	100.0

[1] The 1978 Shining Rock user survey did not include this question.
Mean number of groups with dogs seen per day: 1990 = 1.16.

Perception of Wilderness Problems

As in 1978, few 1990 Shining Rock users felt that trails following abandoned roadbeds and too few bridges across streams were problems (Table 38). In addition, few 1990 visitors believed there were too many trails in the wilderness. Of the remaining trail issues considered (i.e., trails poorly marked, trails poorly maintained, and trail erosion), many users believed there are problems and that the problems are getting worse. For example, in 1978, 10.1% of the respondents felt that poorly maintained trails was a moderate or big problem. The percentage of 1990 wilderness visitors who felt this way increased to 20.8%. The percentage of study participants rating trails as poorly marked also increased across the study years; growing from 24.7% in 1978 to 28.7% in 1990. Finally, 1990 Shining Rock visitors felt that trail erosion was a serious problem; almost 40% of all respondents rated this problem as moderate or big.

Many 1990 Shining Rock users felt various campsite attributes were problems, but perceptions of problems appear to have changed little across the study years (Table 39). For example, 14.7% of the 1978 visitors felt that no supply of drinking water was a moderate or big problem; this percentage was 14.8% in 1990. Thirty-four percent of the respondents in 1978 rated destruction of campsite vegetation as moderate or big problems; the comparable number in 1990 was 30.8%. In line with this finding, about 30% of the 1990 respondents felt that the large number of places where others have camped was a moderate or big problem. Between 30% and 35% rated firerings as full of litter or as ugly in

appearance in 1978 and 1990. The 1990 survey also asked additional questions about the condition of firerings in the wilderness. Between 21% and 24% of the respondents felt that there were too many firerings or that firerings were too built up. Problems of lack of suitable campsites and not enough privacy have apparently stayed about the same or declined from 1978 to 1990. In 1978, 16.5% of respondents said that locating a suitable campsite was a moderate or big problem; the comparable percentage in 1990 was 12.5%. In 1978 about one-third of all users felt that lack of privacy was a serious problem; 23.2% felt the same in 1990. In summary, almost a third of 1990 Shining Rock visitors perceive various ecological impacts to campsites to be problems. Perceptions of social impacts seem to be less severe, and less severe now than in 1978.

Both the 1978 and 1990 Shining Rock studies asked participants about their perceptions of the extent to which polluted streams, not enough wildlife, annoying insects, and streambank erosion were problems. Responses were remarkably similar across the two study years. Few people, i.e., about 10%, rated polluted streams, annoying insects, and streambank erosion as a moderate or big problem in either of the study years (Table 40). Many more respondents, i.e., 29.2% in 1978 and 22.7% in 1990, had comparable feelings about not seeing enough wildlife. But even this wildlife problem is not perceived as great as several trail and campsite problems.

The two studies addressed a series of possible people problems in Shining Rock Wilderness, and perceptions of most such problems have declined from 1978

to 1990 (Table 41). Of the ten problems considered, only perceptions of rowdy or noisy people stayed about the same. About 13% of respondents felt this was a moderate or serious problem during both study years. The most serious people problems were litter, too many people in certain places, and too many people in the whole area. About 45% of all respondents in 1978 felt that litter and too many people in certain places were moderate or big problems. By 1990 the number of respondents feeling this way had dropped to about 35% for both problems. In 1978 about 35% of all study participants said that too many people in the whole area was a moderate or big problem. Perceptions of such area crowding declined to 25% in 1990. The drop in respondents who rated area crowding as a big problem was also large, falling from about 17% to about 10%.

The next most serious perceived people problems were large groups and inadequate disposal of human wastes. About 28% and 22%, respectively, rated these two problems as moderate or big in 1978. By 1990 comparable percentages had dropped to 21% and 17%. Almost all of this drop was in the number of people who rated these problems in the most serious category. Perceptions of ORVs as problems in Shining Rock Wilderness have also declined across the study years. For example, in 1978 about 17% of all respondents said ORVs were moderate or big problems. This percentage decreased to 11% in 1990. The percent of respondents who said pets off a leash was a problem of comparable severity declined from 15% in 1978 to 10% in 1990.

In 1978, vandalism and theft of personal property were perceived as relatively serious problems. About 13% and 9%, respectively, rated the two problems as moderate or big, and more people rated it as a big problem than a moderate problem. By 1990, these problems were almost nonexistent, dropping to about 5% and 2%. The problem of theft from cars parked at trailheads has apparently been largely solved.

Since the use of information as a management tool is generally preferred by wilderness users and managers alike, both the 1978 and 1990 Shining Rock studies addressed questions of the adequacy of current information services. Up to as many as one-third of all respondents felt that some types of information were inadequate, but often fewer respondents saw problems in 1990 than in 1978. Between 10% and 17% defined not enough information on campsite locations, trail locations, and trail conditions as moderate or big problems in 1978 (Table 42). Comparable figures in 1990 were remarkably similar, ranging from 11% to 19%. About 31% of Shining Rock visitors in 1978 said the lack of information on the area's natural and cultural history was a moderate or big problem. Only about 22% held such perceptions in 1990. Respondents also see the adequacy of information provided about use conditions in the wilderness as improving across the two study periods. In 1978, between 30% and 34% of all respondents felt that the lack of information about the number of other users, where other users are likely to be, and when the area is heavily used were moderate or big problems. These percentages decreased to between 19% and 26% in 1990. The Shining

Rock Wilderness map with its text on wilderness characteristics, use conditions, and low impact guidelines appears to be having a positive effect. Still, about one-fourth of all 1990 users feel that some kinds of information are inadequate.

Table 43 describes Shining Rock users' perceptions of problems with respect to several general management issues in 1978 and 1990. Most problems do not appear to be serious, and some seem to be declining in importance. Between 10% and 15% of respondents felt that not enough parking spaces at entry points, rules and regulations not adequately publicized, and difficulty of finding the wilderness due to scarcity of road signs were moderate or big problems in both 1978 and 1990. The problems of road signing and lack of parking spots appear to be increasing slightly. Too many rules and regulations was not seen as a problem in either 1978 or 1990. Finally, the 1990 questionnaire included items on the problems of low flying aircraft and sonic booms. Almost no one rated these as moderate or serious problems.

Table 38. Shining Rock Wilderness users' perception of trail problems, 1978 and 1990.

1978	Trails poorly maintained		Trails poorly marked		Too few bridges across streams		Trails following abandoned roadbeds		Too many[1] trails		Trail[1] erosion	
	N	%	N	%	N	%	N	%	N	%	N	%
No problem	277	66.7	203	49.0	319	78.6	295	71.2				
Small problem	92	22.2	104	25.1	43	10.6	65	15.7				
Moderate problem	37	8.9	69	16.7	11	2.7	26	6.3				
Big problem	5	1.2	33	8.0	2	0.5	11	2.7				
Don't know	4	1.0	5	1.2	31	7.6	17	4.1				
Total	415	100.0	414	100.0	406	100.0	414	100.0				
1990												
No problem	228	52.5	189	43.4	338	79.5	298	69.0	333	77.1	121	27.8
Small problem	112	26.0	114	26.2	35	8.2	59	13.7	51	11.8	140	32.2
Moderate problem	61	14.1	67	15.4	19	4.5	32	7.4	24	5.6	102	23.4
Big problem	29	6.7	58	13.3	9	2.1	6	1.4	12	2.8	66	15.2
Don't know	3	0.7	7	1.6	24	5.6	37	8.6	12	2.8	6	1.4
Total	434	100.0	435	100.0	425	100.0	432	100.0	432	100.0	435	100.0

[1] This item was not included in the 1978 Shining Rock Wilderness user survey.

Table 39. Shining Rock Wilderness users' perceptions of campsite problems, 1978 and 1990.

1978	Destruction of vegetation		Lack of suitable campsites		No supply of drinking water		Too many firerings[1]		Firerings too built up[1]		Firerings full of litter[2]		Not enough privacy		Too many places where others have camped[1]	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
No problem	116	38.7	192	64.7	192	63.0					109	35.8	138	45.5		
Small problem	80	26.7	55	18.5	67	22.0					89	29.3	62	20.5		
Moderate problem	56	18.7	41	13.8	34	11.1					58	19.1	66	21.8		
Big problem	46	15.3	8	2.7	11	3.6					48	15.8	35	11.5		
Don't know	2	0.6	1	0.3	1	0.3					0	0.0	2	0.7		
Total	300	100.0	247	100.0	305	100.0					304	100.0	303	100.0		
1990																
No problem	126	30.8	235	57.7	246	60.4	166	40.7	174	42.8	130	31.9	163	40.2	125	30.6
Small problem	109	26.7	74	18.2	65	16.0	97	23.8	93	22.9	107	26.3	92	22.7	117	28.7
Moderate problem	75	18.3	38	9.3	37	9.1	57	14.0	51	12.5	61	15.0	61	15.1	73	17.9
Big problem	51	12.5	13	3.2	23	5.7	42	10.3	35	8.6	65	16.0	33	8.1	49	12.0
Don't know	48	11.7	47	11.5	36	8.8	46	11.3	54	13.3	44	10.8	56	13.8	44	10.8
Total	409	100.0	407	100.0	407	100.0	408	100.0	407	100.0	407	100.0	405	100.0	408	100.0

[1] This item was not included in the 1978 Shining Rock Wilderness user survey.
[2] This caption was "ugly firerings" in the 1978 user survey.

Table 40. Shining Rock Wilderness users' perception of resource problems, 1978 and 1990.

	Polluted streams		Not enough wildlife		Annoying insects		Streambank erosion	
1978	N	%	N	%	N	%	N	%
No problem	269	66.3	181	44.5	265	64.3	214	52.7
Small problem	48	11.8	93	22.9	95	23.0	94	23.1
Moderate problem	24	5.9	66	16.2	25	6.1	34	8.4
Big problem	23	5.7	53	13.0	21	5.1	15	3.7
Don't know	42	10.3	14	3.4	6	1.5	49	12.1
Total	406	100.0	407	100.0	412	100.0	406	100.0
1990								
No problem	250	57.7	189	43.8	285	65.8	267	61.5
Small problem	68	15.7	109	25.2	93	21.5	75	17.3
Moderate problem	34	7.9	66	15.3	35	8.1	19	4.4
Big problem	12	2.8	32	7.4	10	2.3	6	1.4
Don't know	69	15.9	36	8.3	10	2.3	67	15.4
Total	433	100.0	432	100.0	433	100.0	434	100.0

Table 41. Shining Rock Wilderness users' perceptions of people problems, 1978 and 1990.

	Litter		Theft of personal property		Inadequate disposal of human wastes		Vandalism		Pets off a leash		ORVs		Rowdy or noisy people		Large groups		Too many people in whole area		Too many people in certain places	
1978	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
No problem	68	16.3	314	75.5	222	53.6	282	68.4	261	63.5	274	66.0	267	64.2	203	49.4	170	41.4	127	30.9
Small problem	163	39.1	23	5.5	86	20.8	36	8.7	63	15.3	41	9.9	74	17.8	77	18.7	84	20.4	80	19.5
Moderate problem	109	26.1	12	2.9	43	10.4	21	5.1	38	9.3	33	7.9	28	6.7	57	13.9	73	17.8	83	20.2
Big problem	75	18.0	25	6.0	46	11.1	32	7.8	23	5.6	38	9.2	30	7.2	58	14.1	69	16.8	108	26.3
Don't know	2	0.5	42	10.1	17	4.1	41	10.0	26	6.3	29	7.0	17	4.1	16	3.9	15	3.6	13	3.1
Total	417	100.0	416	100.0	414	100.0	412	100.0	411	100.0	415	100.0	416	100.0	411	100.0	411	100.0	411	100.0
1990																				
No problem	111	25.5	379	86.9	230	52.9	331	75.9	317	72.9	330	76.0	275	63.1	242	55.5	209	48.5	183	42.3
Small problem	169	38.9	8	1.8	81	18.6	38	8.7	50	11.5	39	9.0	90	20.6	91	20.9	103	23.9	94	21.7
Moderate problem	92	21.1	4	0.9	44	10.1	12	2.8	24	5.5	20	4.6	42	9.6	64	14.7	69	16.0	79	18.2
Big problem	61	14.0	5	1.1	30	6.9	11	2.5	20	4.6	19	4.4	18	4.1	27	6.2	41	9.5	69	15.9
Don't know	2	0.5	40	9.2	50	11.5	44	10.1	24	5.5	26	6.0	11	2.5	12	2.8	9	2.1	8	1.8
Total	435	100.0	436	100.0	435	100.0	436	100.0	435	100.0	434	100.0	436	100.0	436	100.0	431	100.0	433	100.0

Table 42. Shining Rock Wilderness users' perceptions about the adequacy of information provided them, 1978 and 1990.

1978	Not enough information on: Where to find campsites		Trail locations		Trail conditions		Number of other users		Where other users are likely to be		When area is heavily used		Area's natural and cultural history	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
No problem	261	63.5	264	63.6	250	60.8	154	37.4	159	38.7	129	31.6	138	33.3
Small problem	85	20.7	77	18.6	91	22.1	107	26.0	95	23.1	120	29.4	130	31.3
Moderate problem	32	7.8	42	10.1	44	10.7	83	20.1	83	20.2	95	23.3	79	19.0
Big problem	13	3.1	25	7.0	18	4.4	41	10.0	46	11.2	42	10.3	49	11.8
Don't know	20	4.4	7	1.7	8	2.0	27	6.5	28	6.8	22	5.4	19	4.6
Total	411	100.0	415	100.0	411	100.0	411	100.0	411	100.0	408	100.0	415	100.0
1990														
No problem	274	64.5	224	52.0	245	56.8	233	54.2	214	49.9	188	43.9	179	41.5
Small problem	72	16.9	117	27.1	100	23.2	84	19.5	93	21.7	97	22.7	126	29.2
Moderate problem	32	7.5	46	10.7	50	11.6	61	14.2	71	16.6	87	20.3	68	15.8
Big problem	15	3.5	37	8.6	18	4.2	20	4.7	22	5.1	25	5.8	28	6.5
Don't know	32	7.5	7	1.6	18	4.2	32	7.4	29	6.8	31	7.2	30	7.0
Total	425	100.0	431	100.0	431	100.0	430	100.0	429	100.0	428	100.0	431	100.0

Table 43. Shining Rock Wilderness users' perceptions of management problems, 1978 and 1990.

1978	Low flying[1] aircraft		Sonic booms[1]		Too few signs, hard to find wilderness		Too many rules and regulations		Rule and regulations not publicized		Not enough parking at entry points	
	N	%	N	%	N	%	N	%	N	%	N	%
No problem					303	73.4	373	90.5	244	59.6	294	71.2
Small problem					68	16.5	23	5.6	89	21.8	66	16.0
Moderate problem					29	7.0	6	1.5	41	10.0	26	6.3
Big problem					11	2.6	7	1.7	24	5.9	21	5.1
Don't know					2	0.5	3	0.7	11	2.7	6	1.4
Total					413	100.0	412	100.0	409	100.0	413	100.0
1990												
No problem	381	88.4	396	92.3	278	64.8	396	91.9	281	65.3	264	61.1
Small problem	29	6.7	10	2.3	87	20.3	16	3.7	82	19.1	97	22.5
Moderate problem	9	2.1	2	0.5	32	7.5	3	0.7	36	8.4	45	10.4
Big problem	0	0.0	2	0.5	24	5.6	2	0.5	19	4.4	21	4.9
Don't know	12	2.8	19	4.4	8	1.9	14	3.2	12	2.8	5	1.2
Total	431	100.0	429	100.0	429	100.0	431	100.0	430	100.0	432	100.0

[1] This item was not included in the 1978 Shining Rock Wilderness user survey.

Evaluation of Type and Amount of Use

The 1978 and 1990 survey of Shining Rock Wilderness users compared number of people seen, number of groups with horses seen, number of large groups seen, and number of groups camped within sight or sound with expectations (Table 44). In addition, the 1990 survey asked respondents to compare the number of groups seen with dogs to their expectations. Except for groups with horses, a sizable minority saw more or far more of each user type than expected. For example, about 40% and 30% of respondents saw more or far more people and large groups, respectively, than they expected. Trends in some of these perceptions from 1978 to 1990, however, suggest a slight decrease in contacts exceeding expectations. For example, about 29% of respondents in 1978 said they camped near more other groups than expected; this number dropped to about 21% in 1990. A smaller percentage of 1990 users, about 19%, said they saw more or far more groups with dogs than they expected.

Seeing more people than expected does not necessarily mean that the number is judged negatively. The 1990 study participants were asked if the number of people seen was too few, about right, too many, or it doesn't matter (Table 45). The greatest number of respondents, 41%, said the number of people seen was about right. However, about 44% of respondents checked the combined response categories of seeing too many and seeing far too many people. Only about 4% said they saw too few people.

Evaluation of Trends in Social and Resource Conditions

As a measure of trends in use, user, and site characteristics, experienced Shining Rock Wilderness visitors in the 1990 study were asked to compare the conditions of the wilderness with that of previous visits (Table 46). About two-thirds of respondents felt that campsite conditions, trail conditions, behavior of other visitors, and overall management of the area were about the same. Only 41% of participants felt this way about the number of other visitors; about 42% felt that the number of other visitors was somewhat or far worse. For all conditions except overall management of the area, many more people felt conditions were worse than better. The largest trend in the negative direction was for overall number of visitors (42% said it was worse, 18% said it was better), but trends in trail conditions were also quite negative (27% rated conditions as worse and 10% said they were better). The number of people who felt campsite conditions and behavior of visitors were getting worse exceeded the number who felt these conditions were getting better by a relatively small margin.

User Satisfaction

Shining Rock Wilderness users were very satisfied with their trip, both in 1978 and 1990. Indeed, in 1978 about 77% of all respondents were very satisfied or extremely satisfied. Only 5% had some degree of dissatisfaction. Satisfaction levels were almost as high in 1990. About 73% were very or extremely satisfied, and about 8% had some dissatisfaction (Table 47).

Table 44. How use numbers and use characteristics compared with Shining Rock Wilderness users' expectations, 1978 and 1990.

1978	Number of people seen		Number of groups with horses seen		Number of large groups seen		Number of groups camped within sight or sound		Number of[1] groups with dogs seen	
	N	%	N	%	N	%	N	%	N	%
Far fewer	19	4.5	57	14.2	31	7.5	25	8.6		
Fewer	47	11.1	35	8.7	50	12.1	33	11.3		
About what expected	169	39.8	84	21.0	142	34.4	117	40.1		
More	108	25.4	22	5.5	84	20.4	62	21.2		
Far more	66	15.5	6	1.5	45	11.0	23	7.9		
Had no expectations	16	3.7	197	49.1	60	14.6	32	10.9		
Total	425	100.0	401	100.0	412	100.0	292	100.0		
1990										
Far fewer	27	6.2	46	11.0	27	6.3	35	9.1	35	8.7
Fewer	66	15.1	32	7.7	44	10.3	43	11.2	47	11.1
About what expected	171	39.2	118	28.3	149	34.7	116	30.1	148	35.1
More	94	21.6	27	6.5	79	18.4	53	13.8	52	12.3
Far more	66	15.1	1	0.2	44	10.3	30	7.8	26	6.2
Had no expectations	12	2.8	193	46.3	86	20.0	108	28.1	114	27.0
Total	436	100.0	417	100.0	429	100.0	385	100.0	422	100.0

[1] This item was not included in the 1978 Shining Rock Wilderness use survey.

Table 45. Shining Rock Wilderness users' opinions about the number of other people they saw on their visit, 1990.

Opinions	N	%
Saw far too few	7	1.6
Saw somewhat too few	10	2.3
About right	179	41.0
Saw too many	132	30.2
Saw far too many	59	13.5
Does not matter	50	11.4
Total	437	100.0

Table 46. Shining Rock Wilderness users' opinions on how current wilderness conditions compare with previous visits--1990.

	Campsite conditions		Trail conditions		Number of other visitors		Behavior of other visitors		Overall management of the area	
	N	%	N	%	N	%	N	%	N	%
Far better now	7	2.5	7	2.5	10	3.5	11	3.8	9	3.2
Somewhat better	30	10.9	21	7.4	40	14.0	20	7.0	33	11.6
About the same	183	66.3	181	63.5	116	40.7	212	74.1	200	70.2
Somewhat worse	49	17.8	69	24.2	82	28.8	33	11.5	35	12.3
Far worse	7	2.5	7	2.5	37	13.0	10	3.5	8	2.8
Total	276	100.0	285	100.0	285	100.0	286	100.0	285	100.0

Table 47. Shining Rock Wilderness users' satisfaction with the wilderness trip, 1978 and 1990.

	1978		1990	
	N	%	N	%
Extremely satisfied	105	24.8	102	23.3
Very satisfied	222	52.4	215	49.2
Somewhat satisfied	66	15.6	72	16.5
Neutral	9	2.1	10	2.3
Somewhat dissatisfied	17	4.0	30	6.9
Very dissatisfied	1	.2	5	1.1
Extremely dissatisfied	4	.9	3	.7
Total	424	100.0	437	100.0

User Standards for Social Conditions

Several different approaches were used to determine user standards for social conditions in Shining Rock Wilderness. The first approach, used in 1978 and 1990, was to ask study participants to rate their percentage of full satisfaction when meeting various numbers of people in the wilderness. This was done in a hypothetical sense; i.e., respondents gave what they thought their percent of full satisfaction would be if they were to encounter varying numbers of averaged-sized hiking groups and to camp in sight or sound of varying numbers of other camper groups.

Satisfaction levels. Table 48 indicates that 1978 and 1990 wilderness users at Shining Rock had generally similar satisfaction standards about meeting other hiking groups, but the 1990 visitors appear slightly more tolerant of other hikers. For example, the highest mean percentage satisfaction (80.6%) of 1990 visitors occurred when meeting one other group on a three-day trip. The highest percent satisfaction (85.4%) in 1978 was for meeting no groups on a comparable trip. The biggest differences between the two study years occurred when contact levels rose from three groups per trip to six and nine groups. In both 1978 and 1990, mean satisfaction levels with meeting three groups per trip was between 75% and 80%. But percentage of satisfaction dropped dramatically to 51.5% for 1978 visitors when six groups were encountered and to 35.6% when nine groups were contacted. Comparable drops in satisfaction levels for 1990 visitors were only to 61.1% and 44.4%.

Shining Rock Wilderness visitors in both 1978 and 1990 have strong preferences to camp out of sight and sound of all other campers (Table 49). Mean percentage of full satisfaction levels exceeded 90% when camping alone during both study years. Satisfaction levels dropped considerably when camping near other groups, but the 1990 respondents were more tolerant of such camper contacts than were the 1978 wilderness users. For example, mean satisfaction levels for the 1978 users dropped to 73%, 47%, and 29% when camped near one, two, or three other camper groups, respectively. Comparable satisfaction levels for the these camping conditions in 1990 were 78%, 59%, and 39%.

Preferred, acceptable, and unacceptable conditions. Another approach to assessing user standards about social conditions that was used in the 1990 study was to ask respondents to give their preferred level of a given condition, the range of acceptable levels, and the range of unacceptable levels. This permits the wilderness manager to set standards on the basis of the preferred encounter level, the highest level of encounter that is acceptable, or the lowest level of the unacceptable social contact range. When setting standards in this fashion, the managers must also decide what percent of the users they will seek to satisfy. Greater agreement or consensus among users about preferred levels, acceptable levels, and unacceptable levels lessens the difficulty of standard selection and management to satisfy the largest number of users.

Table 50 describes the percent of 1990 Shining Rock Wilderness users who listed varying number of contacts with other user groups as their preferred level,

their upper limit acceptable, and their lower limit unacceptable level. For numbers of groups seen per day, the preferred number of such contacts which was cited by the most respondents (24.4%) was five. Another 19% preferred to encounter 3-4 groups per day. Almost as many respondents preferred to see six to ten other groups (21.7%) as preferred to see zero to two groups (23.0%).

The most common highest acceptable number of encounters with other groups per day was ten groups. About 28% of all respondents voted for this number. Opinions, however, varied widely. For example, the second most frequent highest encounter level was five at 18.3%. Third most frequent was to encounter 15 groups per day; 15.7% of all respondents said they would accept this number. Another 9.5% would accept contacts with 20 groups per day. If the manager were to set a standard of the highest acceptable level of contacts that would please 50% of the respondents, that number would be about 10 contacts with other groups per day. If standards were raised to respond to the norms of 75% of the respondents, the number would be five or six contacts with other groups per day.

Because wilderness users often have a range of indecision about encounters between their acceptable levels and their unacceptable levels, they will typically have a higher number for their lowest level of unacceptable encounters than their highest level of acceptable contacts. This was the case for the 1990 Shining Rock Wilderness user standards for contacts with other groups. About 22% of all respondents listed 10-14 such contacts as their lowest level of the unacceptable

condition (Table 50). Another 20.9% listed 15-19 such contacts, and 16.1% selected 20 to 24 groups per day. Using the lowest number of the unacceptable range as the standard, about 50% of all respondents would accept up to 15 group contacts per day. If the standard were raised to satisfy 75% of the respondents, the target number would be about 10 contacts with other groups per day.

The 1990 Shining Rock Wilderness visitors have stricter standards about meeting large groups (i.e., more than six people per day) than for meeting the typical hiking group (Table 50). The most commonly cited preferred level of encounters with large groups was one or two per day; 35.4% of all respondents indicated this level of contact. Next most common at 25.5% of the respondents was preference for three to four contacts with large groups/day, and 19.5% preferred to see no other large groups.

While wilderness users prefer to see no or a very few large groups, they would accept somewhat more. About 40% of all respondents said they would accept five such contacts per day; another 13.8% and 22.4% would accept three to four and one to two groups, respectively. Managing to meet the upper limit acceptable standard of 50% of study participants would require a standard of about four or five large groups per day; meeting the requirements of 75% of the visitors would change the standard to about two such group contacts per day.

The lower bound of the unacceptable range for encounters with large groups was most frequently five to nine contacts; 39.4% of all respondents indicated this level. Next most frequent were encounters in the ten to fourteen

range at 25.1% of all respondents. Summary statistics on the lower unacceptable levels do not differ much from the upper level acceptable conditions. For example, meeting the lower bound unacceptable level norms of 50% of the respondents would require a standard of about five contacts with large groups per day. Satisfying 75% of the visitors changes the standards to four contacts per day.

As seen in other measures of user standards and preferences for camping within sight and sound of other camper groups, Table 50 also reports user demands to camp alone or near few other groups. The level of camping encounters preferred by the most people (39.5%) was to camp near no other group. Another 31.4% of the respondents had preferences of one to two other camping groups nearby.

While wilderness users prefer to camp alone or near one other group, they will accept somewhat more (Table 50). About 32% of the respondents said they would accept up to one or two groups camped within sight or sound, but another 17.9% and 29.8% said they would accept up to three to four groups and five groups, respectively. About 50% of all respondents would accept up to about three other groups camped nearby. If managers would raise their objectives to satisfy 75% of their clientele, they would have to change the standard to about one group camped nearby.

The lower bound of respondents' unacceptable levels for camper contacts were just slightly higher than their upper bound of acceptable levels. This indicates a narrow range of indecision and strong feelings about camping in

proximity to others. The largest group of respondents at 34.8% listed five to nine groups camped nearby as the lower bound of their completely unacceptable level. Another 27.5% said 10-14 groups camped nearby was their lower bound of the unacceptable range. However, about 50% the respondents had lower bound unacceptable standards of about five groups camped nearby; the comparable number to meet the standards of 75% of the study participants was about two groups.

Standards of 1990 Shining Rock Wilderness users for meeting groups with horses were quite similar to those for camping in proximity to others. The largest category of study participants (37.1%) preferred to meet no horse groups in the wilderness. Another 32.9% had preference levels for one or two such groups (Table 50).

Wilderness users would accept somewhat more horse group contacts than they prefer, but much concerns about horses still remain. For example, 30.6% of study participants would accept up to five contacts with horse groups per day, but another 26.4% would only accept up to one or two such contacts per day. If managers were to decide to set wilderness use standards on the basis of what is acceptable to their visitors, data in Table 50 suggest that 50% of Shining Rock users would accept up to about four contacts with horse groups per day. If managers would seek to meet the acceptable level for 75% of their clientele, the horse contact standard would have to be changed to one or two such contacts per day.

User standards for the lower bound of the unacceptable range for horse group contacts are very similar to their judgment criteria for the upper bound of acceptable standards. The largest group of respondents (29.2%) said five to nine contacts with horse groups was their lower bound of the unacceptable range (Table 50). However, just as in the upper bound acceptable level for horse group contacts, the lower bound unacceptable norm for 50% of the study participants was about four contacts with horse groups per day. Similarly, to meet the comparable criterion of 75% of the respondents, the horse group contact standards would have to be changed to about one or two contacts with such groups per day.

The 1990 Shining Rock Wilderness users had contact standards for groups with dogs that were slightly less restrictive than their norms about encountering horse groups and camping proximity to other camper groups (Table 50). Just as for encountering horse groups, the largest groups of respondents (26%) preferred to meet no groups with dogs. However, preferences for contacts with groups with dogs were more varied. For example, 22.4%, 19.8%, and 19.4% preferred meeting one to two, three to four, and five groups with dogs, respectively, per day. Setting preference standards that meet or are lower than the wishes of 50% of Shining Rock Wilderness users would require a standard of about two contacts with dogs per day. A comparable standard that equals or is lower than the preferences of 75% of respondents would be zero contacts with groups with dogs per day.

Study participants were also somewhat more accepting of groups with dogs than they were for groups with horses. For both groups with horses and groups with dogs, the most common standard for users was to accept up to about five encounters per day. But more respondents would accept greater number of such contacts for groups with dogs than with horses (Table 50). For example, a standard of four to five contacts with groups with dogs per day would be acceptable to 50% of study participants. About 75% of the respondents would accept up to two contacts per day with groups who have dogs.

User standards for the lower bound of the unacceptable range were also similar for contacts with horses and dogs, with encounters with dogs being slightly less unacceptable (Table 50). For both types of contacts, a sizeable minority (17.3% for horses and 14.6% for dogs) found meeting even one animal completely unacceptable. These are stronger negative feelings than for any of the contacts with humans considered. But about one-third of all respondents said that five to nine contacts with groups with dogs would be the lower bound of their unacceptable level. If managers were to use the lower bound of unacceptable levels as their criterion for standards, a standard of about five contacts with dogs per day would meet the lower bound, unacceptable personal standards of 50% of users. If managers would seek to respond to the norms of 75% of the users, the standard would need to be changed to about two contacts with groups with dogs per day.

Table 48. Shining Rock Wilderness users' mean percentage of full satisfaction when meeting various numbers of average-sized hiking groups (three or four persons/group) on a three-day trip, 1978 and 1990.

Number of groups met	Mean percentage of full satisfaction			
	1978		1990	
	N	%	N	%
0	375	85.4	381	78.2
1	377	84.2	373	80.6
3	374	75.7	381	78.5
6	373	51.5	374	61.1
9	373	35.6	379	44.4
15	367	19.3	372	25.4
30	362	7.9	373	9.6
60	361	3.2	373	3.8

Table 49. Shining Rock Wilderness users' mean percentage of full satisfaction when camping within sight or sound of various numbers of average-sized groups (3 or 4 persons per group), 1978 and 1990.

Number of groups camped within sight or sound	Mean percentage of full satisfaction			
	1978		1990	
	N	%	N	%
0	289	95.4	378	91.7
1	289	72.6	373	77.9
2	289	46.6	365	58.5
3	289	28.6	366	38.6
5	289	13.1	365	18.1
10	289	5.5	361	4.9

Table 50. Shining Rock Wilderness users' standards for social conditions in the area, 1990.

Evaluation response	Number of groups seen per day		Number of large groups (> 6 people) seen per day		Number of groups camped within sight or sound		Number of horse groups seen per day		Number of groups with dogs seen per day	
	N	%	N	%	N	%	N	%	N	%
Most preferred level:										
0	32	10.4	59	19.5	117	39.5	104	37.1	71	26.0
1-2	39	12.6	107	35.4	93	31.4	92	32.9	61	22.4
3-4	59	19.1	77	25.5	48	16.2	41	14.6	54	19.8
5	75	24.4	50	16.5	23	7.8	27	9.6	53	19.4
6-9	28	9.0	5	1.6	10	3.4	5	1.9	14	5.1
10	39	12.7	2	0.7	1	0.3	6	2.1	12	4.4
11-14	4	1.3	1	0.3	1	0.3	0	0.0	3	1.1
15	21	6.8	0	0.0	0	0.0	2	0.7	0	0.0
More than 15	11	3.5	2	0.6	3	1.0	3	1.1	5	1.8
Total	308	100.0	303	100.0	296	100.0	280	100.0	273	100.0
Upper limit acceptable:										
0	0	0.0	5	1.5	14	4.9	15	5.7	10	3.5
1-2	4	1.2	73	22.4	90	31.6	70	26.4	55	19.0
3-4	10	3.0	45	13.8	51	17.9	42	15.8	44	11.8
5	62	18.3	131	40.1	85	29.8	81	30.6	78	27.0
6-9	35	10.5	24	7.3	21	7.4	17	6.4	30	10.4
10	95	28.1	38	11.6	15	5.3	19	7.2	37	12.8
11-14	14	4.2	4	1.2	2	0.7	2	0.8	10	3.5
15	53	15.7	3	0.9	0	0.0	8	3.0	10	3.5
16-19	6	1.8	0	0.0	3	1.1	0	0.0	0	0.0
20	32	9.5	0	0.0	1	0.4	0	0.0	3	1.0
More than 20	27	8.1	4	1.2	3	1.1	11	4.2	22	7.6
Total	338	100.0	327	100.0	285	100.0	265	100.0	289	100.0
Lower limit unacceptable:										
0	1	0.3	8	2.4	26	8.1	54	17.3	45	14.6
1-2	3	0.9	20	6.0	42	13.2	41	13.1	26	8.5
3-4	4	1.2	51	15.3	70	21.9	53	16.9	42	13.5
5-9	44	13.3	122	39.4	111	34.8	91	29.2	104	33.6
10-14	74	22.4	84	25.1	56	27.5	48	15.3	53	17.1
15-19	69	20.9	31	9.3	12	3.8	18	5.8	29	9.4
20-24	53	16.1	9	2.7	3	0.9	8	2.6	10	3.2
25-29	43	13.0	0	0.0	0	0.0	0	0.0	0	0.0
30 or more	39	11.8								
Total	330	100.0	335	100.0	320	100.0	313	100.0	309	100.0

Relating Standards to Current Conditions

When setting wilderness use standards, the manager must not only consider the preferences and norms of users, he or she must also assess how realistic is the visitor input relative to existing wilderness conditions. It would be unrealistic to set standards that were simply unattainable, given current use and user conditions and impacts. Given this, we selected camping within sight and sound of other campers as a critical use variable for testing, and asked 1990 respondents for both their preferences about camping proximity to other groups and how often they were able to find their preferred kind of campsite in Shining Rock Wilderness.

Table 51 indicates that 65.8% of respondents prefer to camp alone. Another 16.7% said camping within sight or sound of one other group was the preferred condition. Thus, there is a strong norm for camping alone or almost alone. Table 52 indicates that while not all campers find their preferred condition, enough campers do frequently enough to make a user proximity standard of camping within sight or sound of no other groups seem feasible. For example, among those users who prefer to camp alone, 70% said they always or usually found this condition. If a standard of camping alone was established, some management intervention would be needed to increase the likelihood that all visitors who currently desire camping solitude might find places to camp out of sight and sound of other groups.

Table 51. Number of others parties that Shining Rock Wilderness users prefer to camp within sight and sound, 1990.

Number of groups	N	%
0	256	65.8
1	65	16.7
2	51	13.1
3	10	2.6
4 or more	7	1.9
Total	389	100.0

Table 52. The success of Shining Rock Wilderness users with preferences for camping in sight or sound of various numbers of other groups at finding their preferred kind of campsite--1990.

Success at finding preferred situation	Prefer to camp in sight or sound of the following number of other camping groups:									
	0		1		2		3		4 or more	
	N	%	N	%	N	%	N	%	N	%
Always	52	36.1	9	20.9	5	15.2	1	20.0	0	0.0
Usually (at least ½ time)	48	33.3	20	46.5	13	39.4	1	20.0	2	40.0
Sometimes (less than ½ time)	21	14.6	8	18.6	12	36.4	2	40.0	2	40.0
Never	23	16.0	6	14.0	3	9.1	1	20.0	1	20.0
Total	144	100.0	22	100.0	18	100.0	5	100.0	5	100.0

Preferences for Use Management Strategies

Compared to most wildernesses, Shining Rock Wilderness is heavily used (Hendee et al., 1990). Opinions among Shining Rock Wilderness visitors about the need for use controls were remarkably similar in 1978 and 1990 (Table 53). About one-fourth of all respondents felt that controls were needed now to lower use. Somewhat more study participants in 1990 (44.9%) than in 1978 (38.0%) felt that no controls were needed now, but should be imposed in the future if overuse occurs. This greater tolerance among 1990 users for use is somewhat surprising, since 1990 visitors reported seeing more people than did the 1978 visitors. In both study years, fewer than 10% of respondents felt that no controls on use levels should be implemented, now or in the future.

The finding that Shining Rock Wilderness users are generally accepting of use limitations is confirmed by their relative support for limits on overall use and for a maximum group size (Table 54). In 1990, more than 65% strongly or somewhat supported limits on overall use; only about 20% registered any opposition. About 70% of all respondents in both 1978 and 1990 supported limiting group size; opposition to such a limit was less than 20 percent.

When asked what should be the maximum group size, 1978 and 1990 wilderness users held similar opinions. The mean preferred maximum group size was 8.7 in 1978 and 9.0 in 1990 (Table 55). During both years, about 47% of the respondents said that the maximum group size should be four to six people. When the few respondents who set group size limits at one to three were added

to the individuals favoring a four to six person group limit, about 50% of all student respondents voted for a limit of group size at six or fewer.

Table 56 describes 1978 and 1990 wilderness users' opinions on how to reduce contacts between people or reduce impacts to the environment. The only strategy to receive strong support during both study years was the provision of information on when and where the area was heavily used. About 90% of all respondents in both studies supported the use of information for these purposes. Opposition was almost nonexistent. Developing more trails was the only other management intervention that was supported by the majority of respondents and this only in 1978. By 1990 opinion on this matter was evenly split; about 41% favored and 41% opposed building more trails. While a majority did not favor assigning departure points, departure times, and campsites in either 1978 or 1990, many more respondents favored these strategies in 1990 than in 1978. For example, only 22%, 10%, and 20% favored assigned departure points, departure times, and campsites, respectively, in 1978; by 1990 comparable support had reached 37%, 18%, and 29%. Somewhat more study respondents in 1990 favored than opposed (34% versus 27%) limiting use during the wet season, and a sizeable minority of users neither supported nor opposed this strategy or just didn't have an opinion. Opposition by 1990 study participants to concentrating camping at just a few sites was quite high; about 52% opposed this idea and about 25% supported it.

Table 53. Shining Rock Wilderness users' opinions on the need for use controls, 1978 and 1990.

	1978		1990	
Extent of controls	N	%	N	%
Yes, controls are needed now to lower use	99	24.3	102	24.2
Yes, controls are needed now to hold use at current level	119	29.2	91	21.6
No controls needed now, but should be imposed in future if overuse occurs	155	38.0	189	44.9
No controls now or in the future	35	8.5	39	9.3
Total	408	100.0	421	100.0

Table 54. Shining Rock Wilderness users' opinion on use limits if the area becomes too heavily used, 1978 and 1990.

	Limit overall use of the area[1]		Limit the maximum number of people per group			
	1990		1978		1990	
Opinion	N	%	N	%	N	%
Strongly support	127	30.1	175	43.7	176	41.1
Somewhat support	151	35.8	104	26.0	132	30.8
Neither support or oppose	46	10.9	37	9.2	38	8.9
Somewhat oppose	53	12.6	27	6.8	41	9.6
Strongly oppose	30	7.1	49	12.3	28	6.5
Don't know	15	3.6	8	2.0	13	3.0
Total	422	100.0	400	100.0	428	100.0

[1] This item was not included in the 1978 Shining Rock Wilderness use survey.

Table 55. Shining Rock Wilderness users' preferences for maximum group size, 1978 and 1990.

	1978		1990	
Maximum group size	N	%	N	%
1-3	4	1.2	3	.9
4-6	156	47.4	161	46.7
7-9	42	12.8	62	18.0
10-12	73	22.2	79	22.9
13-15	25	7.6	18	5.2
Over 15	29	8.8	22	6.4
Total	329	100.0	345	100.0

Mean preferred group size: 1978 = 8.7
1990 = 9.0

Table 56. Shining Rock Wilderness users' opinions on methods to achieve better spacing and distribution among groups using the area, 1978 and 1990.

1978	Provide better info on when and where heavy use occurs		Develop more trails		Assign departure points		Assign departure times		Assign campsites		Limit use during wet season[1]		Concentrate camping on just a few sites[1]	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Strongly support	271	66.6	103	25.5	27	6.7	9	2.3	22	5.5				
Somewhat support	97	23.8	111	27.5	62	15.4	31	7.8	58	14.5				
Neither support nor oppose	24	5.9	43	10.6	79	19.6	44	11.0	28	7.0				
Somewhat oppose	3	0.7	56	13.9	98	24.3	111	27.8	71	17.7				
Strongly oppose	6	1.5	80	19.8	121	30.0	195	48.9	213	53.1				
Don't know	6	1.5	11	2.7	16	40.0	9	2.2	9	2.2				
Total	407	100.0	404	100.0	403	100.0	399	100.0	401	100.0				
1990														
Strongly support	265	61.8	67	15.7	49	11.5	21	4.9	44	10.3	33	7.7	29	6.8
Somewhat support	128	29.8	111	25.9	108	25.4	57	13.3	80	18.7	114	26.7	75	17.7
Neither support nor oppose	28	6.5	63	14.7	100	23.5	72	16.9	38	8.9	132	30.9	78	18.4
Somewhat oppose	3	0.7	98	22.9	82	19.2	114	26.7	90	21.1	70	16.4	111	26.2
Strongly oppose	1	0.2	78	18.2	61	14.3	155	36.3	162	37.9	47	11.0	108	25.5
Don't know	4	0.9	11	2.6	26	6.1	8	1.9	13	3.0	31	7.3	23	5.4
Total	429	100.0	428	100.0	426	100.0	427	100.0	427	100.0	427	100.0	424	100.0

Discussion

Management Implications

The findings of this comparison of 1978 and 1990 use and users of Shining Rock Wilderness have several implications for the current management of the area. The first is to cast doubt on whether actual use of Shining Rock has declined dramatically--or even at all--since 1978. Forest Service estimates suggest this decline has occurred, but study participants reported seeing more people in the wilderness in 1990 than in 1978. This suggests that managers must continue to be vigilant to reduce the ecological and social impacts associated with high visitor use. Also, additional managerial attention must be given to developing better estimates of overall wilderness use.

The United States population is aging, and some have suggested that this will result in declines in demands for wilderness allocation and reduction in wilderness use. This may indeed occur, but Shining Rock Wilderness users are relatively old and getting older. The relatively small size of Shining Rock Wilderness and most eastern wildernesses may make these areas more accessible to older people. In any event, changes in age demographics appear less likely to reduce use at Shining Rock than at many other wildernesses, and continued use by an older population likely suggests a high proportion of day visitors.

As in most wilderness areas, education levels among Shining Rock visitors are very high, and getting higher. At the same time, area users are relatively

inexperienced in wilderness use. Taken together, these two visitor characteristics provide both a challenge and an opportunity for managers. Given low levels of experience and the rapidly changing recommendations regarding low impact practices, wilderness visitors have much to learn on methods to reduce their impacts. For example, while many prefer and use stoves instead of wood fires, the problem of campfire scars and inappropriate firerings is common in Shining Rock. At the same time, the users want more information to better enjoy the area and to reduce social and ecological impacts. With their high education levels, visitors are accustomed to processing information to reach decisions. Thus, education is likely to be effective in changing behavior. The recently developed Shining Rock Wilderness map and brochure seems to be an effective educational tool (Stubbs, 1991), but more effort is needed. Care must also be given to determining what educational medium is most effective in communicating which messages. For example, Stubbs (1991) recently found that trailhead posters were effective in reducing wood fire problems in Shining Rock, but they were ineffective in prompting appropriate campsite selection and tent placement.

While Shining Rock users are relatively inexperienced, they typically have visited several other wildernesses. This indicates that they are likely to be receptive to information and other managerial attempts to redistribute current Shining Rock use to other areas. Managers should, however, carefully study the advisability of shifting use across areas. At Shining Rock there is some evidence of overuse, but shifting use to other areas may negatively change the nature of the

experience provided there and may also cause unacceptable ecological impacts. This is especially a concern, given recent research that suggests most campsite impacts occur under conditions of light use (Cole, 1987).

Most Shining Rock Wilderness use is day use, and is becoming more so. Among overnight stays a visit of one night is most common. This use characteristic, common to many wilderness areas, has policy and practical considerations for managers. They must first decide whether day users in wilderness receive an experience which differs in any substantive way from a visit to nonwilderness forested environments. It may be that uniquely wilderness experiences require more time in roadless areas; i.e., more time is needed to feel harmony with nature, find solitude, and to live primitively. If so, managers must ask themselves whether such heavy day use is appropriate, and how longer stays in wilderness could be encouraged. If managers simply accept the apparent shift to greater day use, then the practical implication may be to shift managerial attention more toward day use issues. Maintaining trails and reducing trail erosion represent current needs. We are, however, reluctant to recommend that efforts to provide campsite privacy and to monitor and reduce campsite impacts be reduced. These conditions are highly valued by wilderness campers in Shining Rock, both in 1978 and in 1990.

Use concentration at certain times and places is common at Shining Rock, and appears generally unchanged from 1978 to 1990. Managers must decide if this is a problem, and if so, what to do about it. From a social standpoint, we

think it is a problem -- although not as severe as such problems as trail erosion. Many Shining Rock users believe that the area is too heavily used at certain times or places; most campers prefer to camp out of sight or sound of other groups; and most users want information on when and where the area is heavily used. However, before managers intervene we recommend that they evaluate the impacts -- both social and ecological -- of such a shift in use upon places that are currently lightly used. If a shift in place of use seems appropriate, then this might best be done through educational efforts and relocations of trails. The high concentration of use on weekends appears for the most part beyond the manager's control, but simply informing the potential visitors of the light use during the week may have some benefit. Finally, the Forest Service typically adds additional staff for visitor contact during the summer months, but Shining Rock receives heavy use during the fall color season. Wilderness rangers should be retained at Shining Rock at least through the end of October.

Certain site management issues at Shining Rock Wilderness deserve immediate management attention, at least from the viewpoint of the visitors. The most pressing need is for greater trail maintenance. Indeed, this problem appears more deserving of attention than any other found in the entire study. There is also surprising visitor concern about destruction of campsite vegetation and the existence of problem firerings. There appears to be a need for managers to put a field crew into Shining Rock to rehabilitate the trails and to establish a monitoring system to record ecological conditions at campsites. Some

rehabilitation of campsites may be necessary, but if this is done, managers need to be sensitive to the mandates of the Wilderness Act regarding naturalness.

Shining Rock Wilderness is heavily used, and apparently more heavily used today than in 1978. Visitors have apparently had two major responses to the high use. First, they have become somewhat more tolerant of high use conditions. Second, a sizeable minority (about 40%) nevertheless believe that the area has too many users. Indeed, about 25% support controls now to lower use. This suggests to us that the potential problem of overuse deserves management attention. It appears that within some upper bound, visitors have a floating baseline on what use is acceptable. Within some upper limit, the more contacts with other groups that visitors have in the wilderness, the more they will accept. (Another explanation is the displacement - succession phenomenon; i.e., people with restrictive standards about contacts drop out of the wilderness user population as use increases, and their places are taken by individuals with less restrictive contact standards.) Managers must decide if they will accept the floating baseline or the displacement - succession phenomenon. We don't think they should. Also, many Shining Rock Wilderness users have apparently already reached their upper limit regarding contacts. We believe that managers should establish standards of acceptable contact conditions for Shining Rock, and these standards should focus initially on campsite privacy and group size. The next level of concern should be management of overall use.

Given study findings, we would expect little opposition to the general notion of limits on group size, although setting the limit at six persons would likely provoke some complaints. Achieving support for initiatives to increase the likelihood of campsite privacy may be more difficult, because a majority of visitors oppose campsite assignment. Providing information on the distribution of available campsites may be effective (Roggenbuck and Berrier, 1982), and this intervention technique has wide visitor support.

A decision to limit Shining Rock Wilderness use or reduce it below its current level represents a major managerial intervention, and seems to require input beyond the data of this study. For example, legal mandates, long standing agency policy, and ecological impact analysis must be considered. Also, we need more information on the nature of the wilderness experience, and how wilderness dependent experiences are affected by varying levels of contact. We believe, however, that this study of visitor characteristics and preferences does not argue persuasively against limitations on overall use.

Need for Additional Research

While this study provided considerable insight into the characteristics and opinions of Shining Rock Wilderness users, it also revealed some questions that remain unanswered or which require further clarification. Much research is still needed before we fully understand the nature of the wilderness experience and the relationship between the wilderness environment and the wilderness user.

There is first of all an urgent need for researchers to work with managers to develop cost effective and reliable methods to estimate overall area use. Manager estimates of use of Shining Rock suggest dramatic declines since 1978, but this research suggests increases in use. The technology for use estimation to a large extent already exists (Roggenbuck and Lucas, 1987). What is needed is technology transfer, and some additional field refinement may be necessary to make use estimation procedures feasible, valid, and reliable.

Two additional bits of demographic information would also make research on wilderness user characteristics more comprehensive. The first is to add a survey question on racial or ethnic origin of the respondent. At this time we believe that there is almost no wilderness use by Blacks, Hispanics, or Asians. Yet these groups make up large minorities in our country, and wilderness is apparently not meeting their needs. Also, projections suggest that these groups will become increasingly numerous in the U.S. population with the passage of the decades. We simply don't know how these changes in the nation's demographics will alter demand for and use of wilderness. Thus, a general population survey of these minority groups to assess their knowledge, values, commitment, preferences, and use regarding wilderness is also needed.

A second research need on user demographics is to obtain a better measure of the age distribution of wilderness users. Surveys of wilderness users' opinions and characteristics generally exclude those below about 16 years of age. This leads to estimates of the wilderness user population as older than it really is.

The trailhead contact person can easily solve this problem in field surveys by collecting data on the age of all individuals in contacted groups.

Group size of Shining Rock Wilderness users is small, and getting smaller. This is generally viewed as a positive trend; i.e., small groups have a less negative social impact upon other groups than large groups. We also tend to think that small groups cause fewer ecological impacts than a comparable number of people in large groups. However, we have little reliable data to support this view, and more research is needed.

The increasingly large proportion of day users of wilderness may be a problem, but we simply don't know at this time. Further research is needed to determine what experiences can only or most easily be obtained in wilderness. Stating it another way, we need to know what experiences are uniquely or largely wilderness dependent. Once this is determined, we can begin to assess the extent to which day users seek and receive the wilderness dependent experiences. If day users seek or receive experiences that have little basis in wilderness, then it might be argued that their recreational needs might best be met in other places.

Use of Shining Rock Wilderness is highly concentrated at certain times and places, and this is often seen as a problem. However, before managers adopt a strategy to redistribute use, research is needed to assess any negative impacts of increased use of zones of the wilderness that currently receive little or no use. Past studies of use and user characteristics, including this one, have reported findings for the area as a whole. What is needed are breakdowns of use patterns,

user characteristics, and user opinions by zones within the wilderness. Also, longitudinal studies of ecological impacts by wilderness zones are needed to determine the advisability of shifting current recreational use.

Greater understanding, care, and consensus are needed among researchers and managers on what to measure and how to measure visitor standards regarding desired social and ecological conditions in the wilderness. At this time there is general agreement that visitor opinion is one of several important inputs to decision-making. But additional information is needed on which wilderness conditions are most critical to shaping high quality, wilderness dependent experiences, and which best define naturalness of ecological systems. Among potentially important social conditions, much past research and management direction have focused on contacts between hiking groups on trails. Recent research, however, suggests that such variables as amount of litter, number of damaged trees at the wilderness campsite, and amount of noise associated with human activities may be more influential on the quality of the visitor experience (Roggenbuck, Watson, and Williams, in press).

Further conceptual development and additional field research are needed on how best to obtain visitor opinions about appropriate standards for desired wilderness conditions. One important decision is to decide what type of visitor evaluation is most useful to managerial decision-making. Early studies focused on satisfaction; then research initiatives measured perceived crowding. More recently, key study constructs were contact preference standards. In our study we

recognized the importance of preferences, but also acknowledged that visitors will likely accept conditions that they don't prefer. We also recognized that wilderness visitors have a range of acceptable conditions and a range of unacceptable conditions. In the final analysis, the wilderness manager must decide which of all these measure is most useful. Research, however, can help by determining which measure is most responsive to changes in the wilderness and which is most closely linked to the quality of the wilderness experience.

Also, additional conceptual development and refinement in measurement instruments are needed to determine whether or which visitors can give valid, reliable, and discrete standards about such phenomenon as contacts with other people in the wilderness. We have a sense that for most wilderness attributes, people have a range of acceptable values. In our study we asked for this range, but in our reporting we again focused on a "number". Our reported number was most often the largest number of acceptable contacts, because the Limits of Acceptable Change management framework (Stankey, Cole, Lucas, Peterson, and Frissell, 1985) seems to support this measure. But our study participants apparently had a difficult time with our measure of acceptable contacts; over 20% failed to answer the question. Also, we wonder if respondents would be consistent across time in multiple measures of the bounds of the acceptable range.

Finally, we are concerned about the apparent "floating baseline" of visitor opinions, and the apparent trend toward greater tolerance among visitors for increasing numbers of many types of social contacts in the wilderness. The

implication of this phenomenon is ever increasing numbers of visitors and less pristine conditions in the wilderness. Managers can act to prevent this occurrence, in part by considering other criteria besides visitor opinions in their decision-making. But research is needed to better understand the floating baseline. The following questions must be answered: "How adaptable are people to changing wilderness conditions?"; "To what extent does the wilderness environment shape the experience, or do people make their own experience?"; "Is there some level of change in the wilderness environment to which visitors can no longer adapt?"; "To what extent is displacement-succession of wilderness user types occurring?"; and "If displacement-succession is occurring, is it because of increasing levels of wilderness use?".

Conclusion

Summary

Shining Rock Wilderness users in 1990 were more likely to be males, but the number of females visiting the area is increasing. Average age of the wilderness visitor was about 35 years, considerably older than the 1978 area users. Age data are skewed somewhat upward by excluding area visitors less than 16 years of age from both the 1978 and 1990 studies. However, the common perception of wilderness users as primarily young and male is largely inaccurate. Education levels among users are very high and getting higher. Income levels too

are high; about 35% of the 1990 area visitors had household incomes over $50,000 annually. About 40% of the 1978 and 1990 wilderness area users grew up in the countryside, farm, or small town; but at the time of the 1990 study, more than half lived in cities larger than 100,000 people. Somewhat less than half of the area users belonged to conservation organizations in both 1978 and 1990.

Shining Rock visitors typically have only recently begun to visit the area, and visit the area only a few times a year. They do however visit other wilderness areas, often more frequently than they visit Shining Rock. They also more likely made their first trip to another wilderness before they visited Shining Rock. While current visitors are relatively inexperienced, they are more experienced wilderness users than were the 1978 visitors.

Group size is small and getting smaller. The most common group size is one or two persons. Similarly, length of stay is short and getting shorter. In 1990, over half of the visits were day use only. Also, among overnight visits, more than half were for one night only. Stays in other wildernesses are longer, but only slightly so. The family is the most common group type, followed closely by groups of friends.

Almost no Shining Rock visitors use horses, and only 13% bring dogs. More groups than expected (about 20%) said they travelled off trail in 1990, but as expected, forays off the trail were very short. Hiking, camping, spending time relaxing in camp, spending time alone, and nature study were the primary reasons for the visit to Shining Rock Wilderness. Almost nobody hunted, fished, or rock

climbed. About 70% prefer stoves over fires for cooking at the campsite, and almost 40% had no wood fire at all.

Hiking and camping are highly concentrated along only a few trails and locations in Shining Rock Wilderness, both in 1978 and in 1990. By far the most popular camping spot is Shining Rock Gap. Fall use is very popular, more popular than the late summer months. Also, use is concentrated on weekends and becoming more so.

Contrary to Forest Service estimates that Shining Rock Wilderness use has declined dramatically since 1978, the 1990 wilderness users report seeing more hiking groups, more large groups, and more groups camped nearby than did the 1978 users. Average daily encounters with other groups on the trail exceeded six in 1990, and the typical number of groups camped in sight or sound of respondents was 1.57.

Even though the 1990 Shining Rock Wilderness users report seeing more people, they generally believe people problems are less severe than did the 1978 users. Nevertheless, more than 30% felt litter and too many people in certain places were problems in 1978 and 1990; and more than 20% felt that too many people everywhere and large groups were problems during both study years. Only 10% of the 1990 users said that pets off a leash was a problem.

Perceptions of campsite problems changed little across the two study years, but some of the most severe problems noted by visitors involved campsite conditions. For example, about one-third of all visitors noted ecological impacts,

including destruction of campsite vegetation, firering problems, and the large number of places where people had camped. Interestingly, more people cited these problems than noted the lack of privacy at the campsite. Of all the problems noted, trail erosion was most frequently mentioned. About 40% of the 1990 respondents said this was a moderate or big problem.

More than 60% of the experienced Shining Rock visitors felt that campsite conditions, trail conditions, behavior of other visitors, and overall management of the area were about the same as found during previous visits. About 40% felt the same about the number of other visitors. About 43% believed the number of other visitors had gotten worse. The next most negative change was in trail conditions, where 27% said conditions were worse.

Fewer Shining Rock Wilderness visitors in 1990 than in 1978 felt the lack of information about wilderness characteristics and use conditions was a problem. Still, in 1990 about 20% of all respondents wanted more information on the area's natural and cultural history, and on the number of other users, where other users were likely to be, and when the area was most heavily used.

A sizable minority saw more people than they expected, especially for total number of hiking groups and total number of large groups. Interestingly, while the 1990 users typically saw more people on trails and in camp than did the 1978 area users, there was a slight decrease in the percent of respondents from 1978 to 1990 who said contacts exceeded expectations. In 1990 about 44% of respondents said they saw too many people, but 41% said it was about right.

Shining Rock Wilderness users in 1990 generally appear to be somewhat more tolerant of encounters with other people than were the 1978 users. For example, when asked about the effect of increasing numbers of hypothetical contacts on trip satisfaction, most 1978 visitors reported highest satisfaction levels when meeting no other groups on the trail or when camping out of sight and sound of other groups. For the 1990 users, meeting one other group on the trail per day was rated highest, and satisfaction dropped less rapidly for increasing numbers of both trail and campsite encounters. Also, even though the 1990 wilderness users reported higher levels of contact with almost all user group types, more than 90% of both the 1978 and 1990 wilderness users were highly satisfied with their trip.

The 1990 Shining Rock study participants gave their preferred level, their range of acceptable levels, and their range of unacceptable levels for a variety of social conditions in the wilderness. This was done by providing the respondents with a continuum of number of daily contacts, usually from 0 to 25 or 50, and asking them to mark the number of contacts that was their daily preferred level, to draw a line below the continuum of contacts to indicate the range of contacts that was considered acceptable, and to draw a line above the continuum of contacts to indicate the range of unacceptable conditions. (See Question 24 on the study questionnaire in Appendix C.) This was done to provide managers with three alternative standards (i.e., the preferred level, the highest level acceptable, and the lowest level unacceptable) of social conditions in the wilderness. In

addition, managers can decide what percent of the visitors whose standards they will attempt to meet. For example, if managers decide to use the highest level of contacts acceptable to 75% of their visitors, then the standards for the 1990 Shining Rock Wilderness visitors would be five or six encounters with hiking groups per day, about two encounters with large hiking groups per day, camping within sight or sound of one other camper group, one or two encounters with horse groups per day, and about two encounters with groups with dogs per day.

These standards seem higher (or more tolerant of contacts with other visitors) than were found with the user satisfaction response to hypothetical contacts described above. This might reflect the more tolerant views of the 1990 users (but the 1978 and 1990 wilderness visitors were included in the hypothetical satisfaction measures described above). It almost certainly reflects the fact that the two questions ask for different judgments. The first method asked respondents to relate contacts to satisfaction. This seems like a very difficult task when so many conditions of the wilderness besides contacts influence satisfaction. The contact standard approach asked respondents what contact levels were acceptable. This judgment, while still difficult, doesn't ask the respondent to weight the role of varying levels of contact with other groups against other influences upon satisfaction. Also, respondents might be expected to accept higher levels of contact than they would prefer, and this was the case for Shining Rock users.

Wilderness managers use other criteria besides visitor preferences or norms about appropriate social conditions in the wilderness when they establish target standards and desired future conditions. These include legal mandates, agency policy, environmental impacts, and feasibility of meeting established standards. One of the strong preferences among Shining Rock overnight visitors is to camp out of sight and sound of other campers. While many current visitors camp near others, especially at Shining Rock Gap, almost 70% said they always or usually were able to find places to camp alone. A standard of camping away from other groups on most nights thus seems feasible.

Shining Rock visitors in both 1978 and 1990 were quite supportive of limits on use to protect the area and the experience. About 25% of all respondents in both study years favored a reduction in current use, and between 20% and 30% supported controls to hold use at its current level. If use controls become necessary, between 65% and 70% of the users support limits on overall use of the area and on group size. Preference for group size limits are, however, quite high. Almost half support a size limit of four to six people, but mean group size limits was about nine people. The only other specific use management action favored by a majority of wilderness users in both 1978 and 1990 was providing more information on when and where the area was heavily used. Support for building more trails has declined since 1978, but 41% of all 1990 users support this management intervention. About 35% of 1990 users favor limiting use during the wet season, but only 25% support concentrating camping at only a few places.

Finally, while most users oppose assignment of departure points, times, and campsites; opposition declined from 1978 to 1990. For example, in 1990 about 29% and 37% of respondents supported assigned campsites and departure points, respectively.

Comparison with Past Studies

The Lucas (1985) comparison of the 1970 and 1982 visits and visitors to the Bob Marshall Wilderness Complex identified a shift in use toward more hikers, less horse use, smaller parties, shorter stays, more summer and less fall use, less weekend peaking of use, and a shift from more consumptive to more contemplative activities in the wilderness. This led Lucas to conclude that wilderness impacts per party were likely declining. This study of Shining Rock wilderness users in 1978 and 1990 found some comparable but also some different changes in wilderness visits. As in the Bob Marshall Wilderness Complex, trends in Shining Rock visits are toward smaller parties, shorter stays, and perhaps more contemplative activities like nature study. But the great preponderance of hikers in Shining Rock stayed about the same across the study years, and peaking of weekend use and heavy fall use increased. Per party impact in Shining Rock has therefore probably not declined as much across the study years as at the Bob Marshall Complex. However, with almost no horse use, each party at Shining Rock probably never had as great an impact as groups at the western areas studied.

Lucas (1985) also found more women, higher education levels, more visitors in professional and technical occupations, and less previous experience in his study areas in 1982 than in 1970. Shining Rock visitors have changed in comparable ways across time, except that the 1990 users had about the same amount of experience -- not less experience -- in the study area.

The 1970 and 1982 Bob Marshall Wilderness Complex users had similar breakdowns of urban/rural residence, age distribution, conservation organization membership, and level of overall wilderness experience. The 1978 and 1990 Shining Rock Wilderness users also had comparable levels of conservation club membership, but 1990 visitors tended more to live in large cities, be older, and to have more overall wilderness experience. This suggests that the visitor characteristics of Shining Rock Wilderness have changed somewhat more than have the Bob Marshall Wilderness Complex users.

Lucas (1980, 1985) and Stankey and Schreyer (1987) have described satisfaction levels and visitor attitudes and preferences about specific management practices across a variety of wilderness areas. The 1985 Lucas study also measured change in the attitudes and preferences of Bob Marshall Wilderness Complex visitors across the 1970 and 1982 time periods. In general, wilderness users in the West are highly satisfied with their trip; report some declines in satisfaction when crowding increases or when isolated campsites become hard to find; accept the general notion of use controls and limits to group size; support the use of information as a management tool; and oppose assigned departure

points, travel routes, and campsites within the wilderness. Shining Rock Wilderness users in both 1978 and 1990 share these characteristics.

Lucas (1985) also reports specific changes in visitor attitudes and preferences across his two study years (1970 and 1982) that are comparable to changes we found in Shining Rock between 1978 and 1990. For example, during the second or follow-up study years, respondents in both studies reported seeing more people, complained much more about the lack of trail maintenance, saw litter as less of a problem (although it was still viewed as a relatively serious problem by the 1990 Shining Rock users), and reported higher concern about impacts to campsite vegetation.

Between 60% and 76% of the 1990 Shining Rock users and the 1982 Bob Marshall Wilderness Complex visitors felt that various site and management conditions were about the same. Of those respondents who felt conditions were changing, more of the 1990 Shining Rock visitors felt conditions were getting worse.

Shining Rock Wilderness users also differ from visitors to other areas by reporting higher, and increasingly higher, contacts with other visitors, that these contacts exceed expectations, but that they are becoming increasingly tolerant of high levels of encounters with other groups. Lucas (1980) notes that visitors to some of the western wilderness areas he studied appeared to have a slight increase in tolerance for visitor contacts, but this shift does not appear to be as great as at the Shining Rock Wilderness. Thus, while the management

preferences and attitudes of Shining Rock Wilderness users are quite similar to those of other areas, managers of the area need to be concerned about the unusually high volumes of use of the area and its impact upon area visitors. Visitors at Shining Rock are still often accepting of current conditions, but they frequently note that use exceeds expectations and that conditions are getting worse.

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Appendix A: Field Contact Person's Introductory Statement

Introductory Statement
Shining Rock Wilderness Study - 1990

Interviewer will introduce himself and explain that he would like to talk to the group for a few minutes. He will explain that Virginia Tech and the Forest Service are conducting a study of wilderness visitors to determine who is visiting the wilderness, to learn more about the types of experiences that visitors are expecting and getting in the wilderness, and to find out how much visitors know about protecting the wilderness resource. The interviewer will get permission from the group to ask a few questions. After agreement is obtained the interviewer will make the following statement to the group:

> "This survey is voluntary. While you are not required to respond, your cooperation is needed to make the survey results comprehensive, accurate, and timely. You may be assured that in the analysis and publication of the results, your answers will not be connected with you individually."

Appendix B: Field Contact Data Collection Sheet

Wilderness User Contact Sheet
Shining Rock Wilderness Study - 1990

Date_____

Time (24 hour clock)_____

Location of Contact Point_____

Group ID (3-digits)_____

---

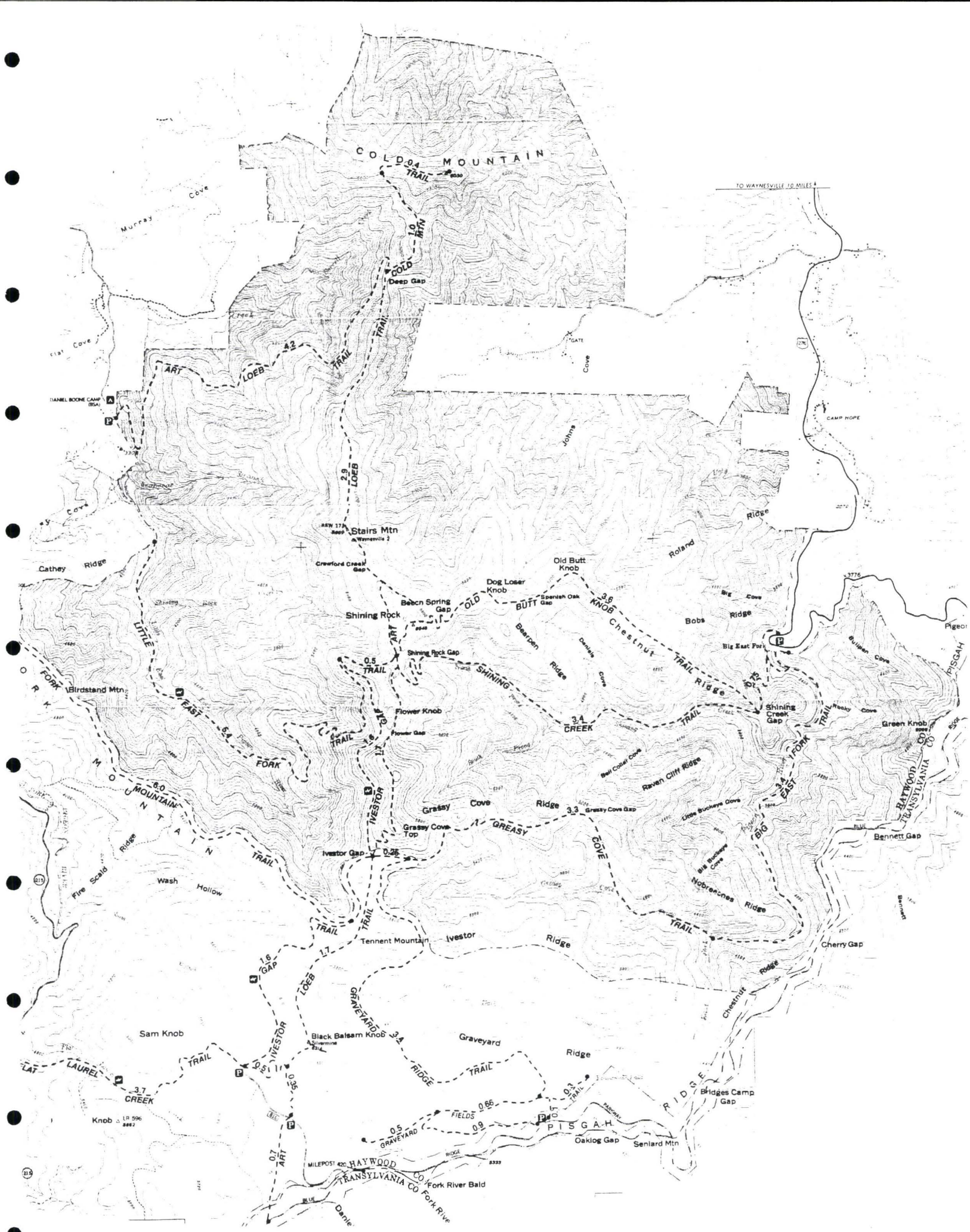
1. How many people are in your group, including yourself?_____

2. How would you describe your group?

[ ] friends
[ ] family (immediate family and relatives)
[ ] family and friends
[ ] club, school, church, or scout group
[ ] alone
[ ] other, please describe:_____
_____

3. Are you presently entering or leaving Shining Rock Wilderness?
[ ] entering [ ] leaving

4. On this map, please indicate:
   1. your entrance point to Shining Rock Wildneress (mark with an X)
   2. your route through the area (trace with a solid line)
   3. your camping spots or intended camping spots (mark with an O)
   4. your exit point (mark with a box)


COLD MOUNTAIN
0.4 TRAIL
1.0 MTN. COLD TRAIL
Deep Gap
TO WAYNESVILLE 10 MILES
Murray Cove
Flat Cove
GATE
Cove
CAMP HOPE
ART LOEB 4.2 TRAIL
DANIEL BOONE CAMP (BSA)
Johns Ridge
2.9 LOEB
Stairs Mtn
Cathey Ridge
Crawford Creek Gap
Old Butt Knob
Dog Loser Knob
Beech Spring Gap
OLD BUTT 2.8 KNOB
Spanish Oak Gap
Roland Ridge
Big Cove
Bobs Ridge
Shining Rock
ART
Shining Rock Gap
0.5 TRAIL
Bearpen Ridge
Daniels Cove
Big East Fork
Pigeon
Bullpen Cove
PISGAH
LITTLE
Chestnut Ridge
TRAIL
Birdstand Mtn
EAST FORK 5.4
Flower Knob
Flower Gap
1.6 TRAIL
1.7 TRAIL
SHINING CREEK 3.4
Shining Creek Gap
Rocky Cove
Green Knob
Bell Collar Cove
Raven Cliff Ridge
EAST FORK
MOUNTAIN 6.0 TRAIL
IVESTOR
Grassy Cove Top
Grassy Cove Ridge 3.3
Grassy Cove Gap
GREASY COVE
Little Buckeye Cove
HAYWOOD TRANSYLVANIA CO
Bennett Gap
Ivestor Gap 0.25
Fire Scald Ridge
Wash Hollow
Big Buckeye Cove
Nobreaches Ridge
Tennent Mountain
Ivestor Ridge
Cherry Gap
1.6 GAP
1.7 LOEB
GRAVEYARD 3.4 RIDGE TRAIL
Sam Knob
Black Balsam Knob
Graveyard Ridge
Chestnut Ridge
LAUREL CREEK 3.7 TRAIL
0.5 IVESTOR
1.0 3.5
Knob
Bridges Camp Gap
FIELDS 0.66
0.5 GRAVEYARD
0.9 RIDGE
0.7 TRAIL
PISGAH RIDGE PARKWAY
Oaklog Gap
Senland Mtn
0.7 ART
MILEPOST 420
HAYWOOD TRANSYLVANIA CO
Fork River Bald
Daniel

5. If leaving, please tell us the date and time you entered the wilderness?
Date:_____ Time (24 hour clock)_____

6. Did you, or do you intend to go camping in Shining Rock Wilderness on this trip?
[ ] Yes -- Administer campsite selection quiz and knowledge test to up to four persons per group.

[ ] No -- If no, get names and addresses of up to four persons per group

7. We would like to send a questionnaire to your home in order to get your views on additional aspects of wilderness management. Could we do that? Your ideas will help the Forest Service protect Shining Rock Wilderness. [Collect up to four names and addresses]

Name	Address (Street/P.O. Box, City, State & Zip)
1._____	_____
	_____
	_____
2._____	_____
	_____
	_____
3._____	_____
	_____
	_____
4._____	_____
	_____
	_____

Appendix C: Mailback Questionnaire

OMB # 0596-0108 Exp. 5/31/93

This survey is voluntary. While you are not required to respond, your cooperation is needed to make the survey results comprehensive, accurate, and timely. You may be assured that in the analysis and reporting of the results, your answers will not be connected with you.

YOUR USE OF SHINING ROCK WILDERNESS

**All of the following questions refer to the visit you made to the Shining Rock Wilderness area on _____, 1990.

1. How many people were in your group in the Shining Rock Wilderness on this trip, including yourself? _____

2. How did you travel in the wilderness on this visit? Check the most common travel method.
   - [ ] Hiked, carrying own equipment
   - [ ] Hiked, leading horses, mules, or burros
   - [ ] Hiked, leading llamas
   - [ ] Rode horses
   - [ ] Other, please describe:_____

3. How would you describe your group? (Check one)
   - [ ] Friends
   - [ ] Family (immediate family and relatives)
   - [ ] Family and friends
   - [ ] Club, school, church or scout group
   - [ ] Alone
   - [ ] Other, please describe:_____

4. On this visit, did your group stay overnight in the wilderness area?
   - [ ] No -- If no, how many hours did you stay in the wilderness?_____
   - [ ] Yes -- If yes, how many nights?_____

5. Which of the following best describes the length of your typical visits to wilderness areas? (Check one)
   - [ ] Usually stay only a few hours
   - [ ] Usually stay a full day
   - [ ] Usually stay one or two nights
   - [ ] Usually stay more than two nights

6. Do you prefer using a wood fire or a stove for cooking in the wilderness? (Check one)
   [ ] Wood fire [ ] Stove

   Did you use a gas stove for cooking on this trip? [ ] No [ ] Yes

   How many times on your trip did you have a wood fire? _____ times

How many of these fires were to sit around and enjoy -- not for cooking? ____fires

7. Did you bring a dog(s) into the wilderness on this trip? [ ] No [ ] Yes

8. Was this your first trip into Shining Rock Wilderness?
   [ ] No -- If no, please answer a, b, and c below
   [ ] Yes -- If yes, go to question 9

   a. How many times have you visited Shining Rock Wilderness before this trip? _____ visits
   b. How many years ago did you first visit Shining Rock Wilderness? _____ years
   c. How many times have you visited Shining Rock Wilderness in the last 12 months? (Don't count this trip) _____ times

9. Have you traveled into other wilderness areas besides Shining Rock?
   [ ] No -- If no, go to Question 13
   [ ] Yes -- If yes, how many years ago did you first visit a wilderness area other than Shining Rock? _____ years

10. How many other wilderness areas have you visited?
    [ ] 1-2 other areas
    [ ] 3-5 other areas
    [ ] 6-10 other areas
    [ ] Over 10 other areas

11. How many times did you visit a wilderness area other than Shining Rock in the past 12 months? _____ visits

12. Since you first visited a wilderness area, about how often have you gone on wilderness trips? (Check one)
    [ ] More than 10 trips per year
    [ ] 6 to 10 times per year
    [ ] 2 to 5 times per year
    [ ] About once per year
    [ ] About 1 trip every 2 years
    [ ] Typically go into wilderness areas less than once every 2 years

13. Please indicate your overall feelings about this visit to Shining Rock Wilderness area.

[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Extremely Satisfied	Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied	Extremely Dissatisfied

What was there about this trip that made you feel this way?

_____

_____

YOUR ROUTE AND ACTIVITIES IN SHINING ROCK WILDERNESS

14. We are interested in knowing what activities you participated in during this visit to Shining Rock and how important each activity was to your decision to make this trip. Please check one of the three responses after each activity listed.

Activity	This Activity Was A Major Reason For Going On This Trip	Participated, But Not A Major Reason For Going On This Trip	Did Not Participate In This Activity
Fishing	[ ]	[ ]	[ ]
Hunting	[ ]	[ ]	[ ]
Camping	[ ]	[ ]	[ ]
Hiking on trails	[ ]	[ ]	[ ]
Hiking off trails	[ ]	[ ]	[ ]
Horseback riding	[ ]	[ ]	[ ]
Rock climbing (using ropes, special equipment, etc)	[ ]	[ ]	[ ]
Nature study (bird watching, identifying wildflowers, rock study, etc)	[ ]	[ ]	[ ]
Photography	[ ]	[ ]	[ ]
Swimming	[ ]	[ ]	
Talking to individuals in other groups	[ ]	[ ]	[ ]
Spending time all alone	[ ]	[ ]	[ ]
Spending time in camp (relaxing, performing camp chores)	[ ]	[ ]	[ ]
Collecting berries, mushrooms, or other	[ ]	[ ]	[ ]

15. On this trip, did you purposely leave the trail to travel through places without trails?
    [ ] No -- If no, go to number 16
    [ ] Yes -- If yes, answer a and b below

    a. About how many miles did you travel while away from the trail? _____ miles
    b. How many nights did you camp in the trailless area? (An answer of zero is perfectly acceptable). _____ nights

Your Opinions About Current Use and Management

16. Please estimate the following for your visit to Shining Rock Wilderness: (consider Day 1 to be only the day you entered the wilderness area)

		Day 1	Day 2	Day 3	Day 4 and beyond
a.	the number of groups you saw	_____	_____	_____	_____
b.	the number of groups of more than 6 people traveling together that you saw	_____	_____	_____	_____
c.	the number of groups that camped within sight or sound of your campsite	_____	_____	_____	_____
d.	the number of groups with horses that you saw	_____	_____	_____	_____
e.	the number of groups with dogs that you saw	_____	_____	_____	_____

17. How did the following compare with what you <u>expected</u> to see in Shining Rock Wilderness? Check the appropriate box for each statement.

	Far Fewer	Fewer	About What I Expected	More	Far More	Had No Expectation
a. the number of people you saw	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
b. the number of groups using horses that you saw	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
c. the number of large groups (more than 6 people) you saw	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

	Far Fewer	Fewer	About What I Expected	More	Far More	Had No Expecta-tion
d. the number of groups that camped within sight or hearing of your campsite	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
e. the number of groups with dogs you saw	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

18. The following set of items are problems you may have run into on your visit to Shining Rock Wilderness. Please indicate how much of a problem each item was for you by placing a mark in one of the spaces provided next to each item.

Possible Trail Problems	No Problem at All	A Small Problem	A Moderate Problem	A Big Problem	Don't Know
a. Trails poorly maintained	[ ]	[ ]	[ ]	[ ]	[ ]
b. Trails poorly marked	[ ]	[ ]	[ ]	[ ]	[ ]
c. Too few bridges across streams	[ ]	[ ]	[ ]	[ ]	[ ]
d. Trails following abandoned roadbeds	[ ]	[ ]	[ ]	[ ]	[ ]
e. Too many trails	[ ]	[ ]	[ ]	[ ]	[ ]
f. Trail erosion	[ ]	[ ]	[ ]	[ ]	[ ]
Possible Campsite Problems					
a. Destruction of vegetation in campsites	[ ]	[ ]	[ ]	[ ]	[ ]
b. Lack of suitable campsites	[ ]	[ ]	[ ]	[ ]	[ ]
c. No supply of drinking water	[ ]	[ ]	[ ]	[ ]	[ ]
d. Too many firerings	[ ]	[ ]	[ ]	[ ]	[ ]

	No Problem at All	A Small Problem	A Moderate Problem	A Big Problem	Don't Know
e. Firerings too built-up	[ ]	[ ]	[ ]	[ ]	[ ]
f. Firerings full of litter	[ ]	[ ]	[ ]	[ ]	[ ]
g. Not enough privacy in campsites	[ ]	[ ]	[ ]	[ ]	[ ]
h. Too many places where other groups have obviously camped	[ ]	[ ]	[ ]	[ ]	[ ]
<u>Possible Resource Problems</u>					
a. Polluted streams	[ ]	[ ]	[ ]	[ ]	[ ]
b. Not enough wildlife	[ ]	[ ]	[ ]	[ ]	[ ]
c. Annoying insects	[ ]	[ ]	[ ]	[ ]	[ ]
d. Streambank erosion	[ ]	[ ]	[ ]	[ ]	[ ]
<u>Possible People Problems</u>					
a. Litter	[ ]	[ ]	[ ]	[ ]	[ ]
b. Theft of personal property	[ ]	[ ]	[ ]	[ ]	[ ]
c. Inadequate disposal of human body wastes	[ ]	[ ]	[ ]	[ ]	[ ]
d. Vandalism	[ ]	[ ]	[ ]	[ ]	[ ]
e. Pets off a leash	[ ]	[ ]	[ ]	[ ]	[ ]
f. Off-road motorized vehicles in the wilderness area	[ ]	[ ]	[ ]	[ ]	[ ]
g. Rowdy or noisy people	[ ]	[ ]	[ ]	[ ]	[ ]
h. Large groups of people	[ ]	[ ]	[ ]	[ ]	[ ]

	No Problem at All	A Small Problem	A Moderate Problem	A Big Problem	Don't Know
i. Too many people in area as a whole	[ ]	[ ]	[ ]	[ ]	[ ]
j. Too many people at certain places in the area	[ ]	[ ]	[ ]	[ ]	[ ]

If you feel there were too many people, describe where the problem was:

Possible Management Problems	No Problem at All	A Small Problem	A Moderate Problem	A Big Problem	Don't Know
a. Low flying aircraft	[ ]	[ ]	[ ]	[ ]	[ ]
b. Sonic booms	[ ]	[ ]	[ ]	[ ]	[ ]
c. Too few signs, hard to find the wilderness area	[ ]	[ ]	[ ]	[ ]	[ ]
d. Too many rules and regulations	[ ]	[ ]	[ ]	[ ]	[ ]
e. Area rules and regulations not adequately publicized	[ ]	[ ]	[ ]	[ ]	[ ]
f. Not enough information on where to find suitable campsites	[ ]	[ ]	[ ]	[ ]	[ ]
g. Not enough information on trail locations	[ ]	[ ]	[ ]	[ ]	[ ]
h. Not enough information on trail conditions	[ ]	[ ]	[ ]	[ ]	[ ]
i. Not enough information on number of other users	[ ]	[ ]	[ ]	[ ]	[ ]
j. Not enough information on where other users are likely to be	[ ]	[ ]	[ ]	[ ]	[ ]
k. Not enough information on when area is heavily used	[ ]	[ ]	[ ]	[ ]	[ ]

	No Problem at All	A Small Problem	A Moderate Problem	A Big Problem	Don't Know
l. Not enough parking spaces at wilderness entry points	[ ]	[ ]	[ ]	[ ]	[ ]
m. Not enough information available on the area's natural or cultural history	[ ]	[ ]	[ ]	[ ]	[ ]

19. How do the following wilderness conditions compare with the way you found them on your previous visits to Shining Rock? Answer only if you visited Shining Rock Wilderness before this trip.

	Far Better	Somewhat Better	About The Same	Somewhat Worse	Far Worse
Campsite Conditions	[ ]	[ ]	[ ]	[ ]	[ ]
Trail Conditions	[ ]	[ ]	[ ]	[ ]	[ ]
Number of other visitors	[ ]	[ ]	[ ]	[ ]	[ ]
Behavior of other visitors	[ ]	[ ]	[ ]	[ ]	[ ]
Overall management of the area	[ ]	[ ]	[ ]	[ ]	[ ]

Your Opinions and Preferences for Future Management

20. When you are camped in the wilderness, about how many other parties would you like camped within sight or sound of your campsite? _____

21. If you camped on this trip into the Shining Rock Wilderness, how often were you able to find this preferred kind of campsite? (check one)

[ ]	[ ]	[ ]	[ ]
ALWAYS	USUALLY (AT LEAST 1/2 TIME)	SOMETIMES (LESS THAN 1/2 TIME)	NEVER

22. How did you feel about the number of other people you saw in Shining Rock Wilderness on this visit? (check one)

[ ] Saw far too few
[ ] Saw somewhat too few
[ ] About right
[ ] Saw too many
[ ] Saw far too many
[ ] Did not matter to me

23. We are interested in finding how satisfied you feel about the number and kinds of groups you encounter in the wilderness. Please indicate below what percentage of full satisfaction you would experience for each of the situations described (for example, the situation that is completely satisfactory for you would be scored 100%; any of the situations below that would be totally unsatisfactory for you would be scored 0%. It is possible, however, that in your opinion the unsatisfactory situations would still provide you with some enjoyment, and you might score them anywhere between 0% and 100%).

Situation A: Meeting the following number of average-sized hiking groups (3 or 4 persons per group) on a three-day trip:

		Percentage of full satisfaction
a.	Meeting no other groups	_____
b.	Meeting one hiking group	_____
c.	Meeting three hiking groups	_____
d.	Meeting six hiking groups	_____
e.	Meeting nine hiking groups	_____
f.	Meeting fifteen hiking groups	_____
g.	Meeting thirty hiking groups	_____
h.	Meeting sixty hiking groups	_____

Situation B: Camping within sight or sound of the following number of average-sized hiking groups (3 or 4 persons per group):

		Percentage of full satisfaction
a.	Camping near no other groups	_____
b.	Camping near one other group	_____
c.	Camping near two other groups	_____
d.	Camping near three other groups	_____
e.	Camping near five other groups	_____
f.	Camping near ten other groups	_____

24. Preferences for social conditions in Shining Rock

We would like to explore your specific evaluations of wilderness conditions in Shining Rock Wilderness. Different people desire different things from wilderness, and managers need to know what things you find acceptable and what things you find unacceptable. Managers can use this information to enhance your wilderness experience.

For each characteristic below, we want you to make three judgments:

a. Is there a range of values along the scale provided that is completely unacceptable? If so, please indicate the unacceptable range by drawing a line **above** it, as shown in the example.

b. Is there a range of values that would also be acceptable? If so, please indicate with a line **below** the scale, as shown in the example.

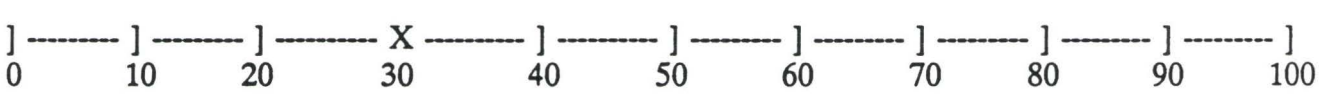
c. Is there a point on this scale that is most preferred? If so, please indicate by placing an **X on that point**, as shown in the example.

Please remember: not drawing a line or placing an X is okay, but this means you are either uncertain or don't care about that item.

////////////////////////////////

EXAMPLE

UNACCEPTABLE

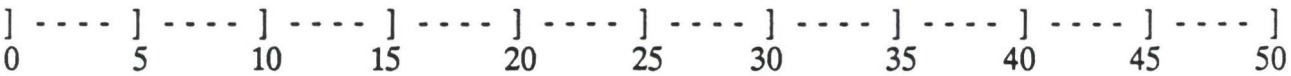


ACCEPTABLE

(In this example, the person prefers to travel on old roads 30% of the time, but 0 to 40% is acceptable; traveling on old roads more than 60% of the time is unacceptable; this person is uncertain about the acceptability between 40 and 60% and, therefore, the acceptable and unacceptable lines do not meet).

////////////////////////////////

A. The number of groups of people I see each day while traveling in the area.



B. The number of large groups (more than 6 people) that I see along the trail in a day.

] - - - -] - - - -] - - - -] - - - -] - - - -]
0 5 10 15 20 25

C. The number of groups that camp within sight or sound of my campsite.

] - - - -] - - - -] - - - -] - - - -] - - - -]
0 5 10 15 20 25

D. The number of groups using horses that I see in a day.

] - - - -] - - - -] - - - -] - - - -] - - - -]
0 5 10 15 20 25

E. The number of groups with dogs that I see in a day.

] - - - -] - - - -] - - - -] - - - -] - - - -]
0 5 10 15 20 25

25. Do you feel that controls are needed on the number of people using Shining Rock Wilderness? (check one)

[ ] Yes, controls are needed to lower the current level of use.

[ ] Yes, controls are needed now to hold use at about the current level.

[ ] No controls are needed now, but should be imposed in the future if and when overuse occurs.

[ ] No, there should be no controls now or in the future on the number of people using the area.

26. If use of the area becomes too heavy and controls are necessary, how would you feel about each of the following management actions? (Check the box that shows how much you support or oppose each action).

	Strongly Support	Somewhat Support	Neither Support Nor Oppose	Somewhat Oppose	Strongly Oppose	Don't Know
a. Limit overall use of the area	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
b. Limit the maximum number of people per group allowed in the wilderness	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

What should be the maximum number of people per group? _____

c. Achieve better spacing and distribution among groups using the wilderness area by:						
1. providing better information on when and where heavy use is occurring	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2. developing more trails in the area	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3. assigning de-parture points for trips into the area	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4. assigning the time of day when each group may begin its trip	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
5. assigning each party to a campsite each night	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

	Strongly Support	Somewhat Support	Neither Support Nor Oppose	Somewhat Oppose	Strongly Oppose	Don't Know
6. limiting use during wet seasons	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
d. concentrating overnight use on just a few campsites	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Finally, in order to make comparisons between the many kinds of visitors to wilderness areas, we would like some general information about you. All information is confidential and will not be identified with your name.

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27. Do you belong to any organizations that are primarily concerned with conservation or outdoor recreation?

☐ No ☐ Yes -- If yes, please list them

_____

28. Your age? _____ years

29. Gender. Please check the box that applies to you.

☐ Male ☐ Female

30. What is the highest level of education you have attained? (Circle one number)

Elementary School	High School	College
less than 8	9 10 11 12	13 14 15 16 more than 16

31. In which of the following kinds of places did you spend the most time while growing up (to age 18)? Please mark only one answer.

[ ] On a farm or ranch
[ ] In the country but not on a farm or ranch
[ ] In a small town (2,500 or fewer people)
[ ] In a town or small city (between 2,500 and 25,000 people)
[ ] In a city (between 25,000 and 100,000 people)
[ ] In a suburb of a large city
[ ] In a large city (over 100,000 people)

32. In what type of community do you now live?
[ ] On a farm or ranch
[ ] In the country, but not on a farm or ranch
[ ] In a small town (2,500 or fewer people)
[ ] In a town or small city (between 2,500 and 25,000 people)
[ ] In a city (between 25,000 and 100,000 people)
[ ] In a suburb of a large city
[ ] In a large city (over 100,000 people)

33. Are you presently (Check one):
[ ] Employed
[ ] Temporarily laid off
[ ] Unemployed
[ ] Retired
[ ] Full-time homemaker
[ ] Student

34. If you are employed, what is your occupation?

TITLE: _____
KIND OF WORK: _____
KIND OF COMPANY OR BUSINESS: _____

35. Which of the following best describes your annual household income before taxes?

[ ] less than $5,000	[ ] $25,000 to $ 34,999
[ ] $5,000 to $9,999	[ ] $35,000 to $ 49,999
[ ] $10,000 to $14,999	[ ] $50,000 to $ 74,999
[ ] $15,000 to $19,999	[ ] $75,000 to $100,000
[ ] $20,000 to $24,999	[ ] OVER $100,000

36. If you would like to receive a summary of the results of this survey, PLEASE WRITE YOUR NAME AND ADDRESS ON THE BACK OF THE RETURN ENVELOPE.

37. PLEASE MAKE ANY FURTHER COMMENTS ON THE BACK OF THIS QUESTIONNAIRE.

Public reporting burden for this collection of information is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, Room 404-W, Washington, D.C. 20250; and to the Office of Management and Budget, Paperwork Reduction Project (OMB# 0596-0108 Exp. 5/31/93), Washington, D.C. 20503.

Appendix D: Cover Letter Sent with First Questionnaire

Dear Shining Rock Wilderness User:

Recently we talked with you in Shining Rock Wilderness and asked for your help on a study of wilderness management. As you know, wilderness areas are set aside by Congress "for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness." Thus, the Forest Service must both facilitate use and preserve the wilderness character of Shining Rock. This is a difficult task, and we need information from you, the customer.

We would greatly appreciate your help if you would take the time necessary to carefully complete the enclosed questionnaire. The questions deal with your trip to Shining Rock Wilderness and your opinions on wilderness management and use. Please send the questionnaire back to us in the self-addressed, stamped envelope as soon as possible. We want the opinions of a truly representative group of people, and so have scientifically choosen a sample of visitors to Shining Rock Wilderness. <u>But, the sample will be good only if those few people we have contacted are responsive.</u>

The questionnaire has an identification number for mailing purposes only. Your response will be held in strictest confidence. All results will be analyzed in such a way that your answers on any single question cannot be identified with you.

This is a good opportunity for you to express your views on a significant regional and national issue. If you would like a copy of the results, print your name and address on the back of the return envelope.

Your help in this study is greatly appreciated.

Sincerely,

Joseph W. Roggenbuck
Associate Professor of Forest Recreation

Christopher J. Stubbs
Graduate Research Assistant

Appendix E: Postcard Reminder

Dear Wilderness User:

Your participation in the Shining Rock Wilderness Study is very important. If you have not already returned the questionnaire you received recently, we would appreciate your doing so as soon as possible.

I thank you for your cooperation.

Sincerely,

Joseph W. Roggenbuck
Associate Professor,
Forest Recreation

Appendix F: Cover Letter Sent with Second Questionnaire

Dear Wilderness User:

You should recently have received a survey sent to a sample of the many wilderness users in North Carolina. Your name was randomly selected for this study. Your participation in it is essential if the results are to be useful in guiding future decisions about the use of wilderness areas.

As a wilderness user, you may be affected by the increasing recreational use of backcountry areas and by management actions taken by the public agencies. The resource agencies should know the preferences and objections of the people who will be most directly influenced by their activities. This study is an opportunity for you to express your personal experiences and feelings as a user.

As of today, we have not received your completed questionnaire. We hope that it is in the mail or that you will take the time to complete the enclosed copy. If you would like to know what other users think or have encountered, please print your name and address on the back of the return envelope.

Sincerely,

Joseph W. Roggenbuck

Christopher J. Stubbs

Dr. Joseph W. Roggenbuck
Associate Professor, Forestry

Christopher J. Stubbs
Graduate Research Assistant

Appendix G: Cover Letter Sent with Third Questionnaire

Dear Wilderness User:

We want to be of help to you. The goal of our Wilderness Use Study is to document the experiences, problems, and preferences of users of Shining Rock Wilderness. This information is sought by the U.S. Forest Service to aid in their decision-making regarding wilderness management.

We have already heard from about 70 percent of our sample, but we have not heard from you. The remaining questionnaires are critical to the scientific validity of our findings. In case you have misplaced the earlier questionnaire, another copy is enclosed.

Your participation in this survey is vital. Please complete the questionnaire and send it to me in the enclosed postage-paid envelope.

Sincerely,

Joseph W. Roggenbuck
Associate Professor
Forest Recreation

Christopher J. Stubbs
Graduate Research Assistant

PS: If you have already returned the questionnaire, it apparently crossed in the mail. Please disregard this reminder.